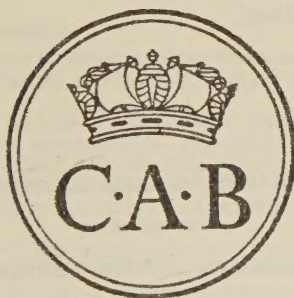


HELMINTHOLOGICAL ABSTRACTS

incorporating

BIBLIOGRAPHY OF HELMINTHOLOGY

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FOR THE YEAR 1956

Vol. 25, Part 5

328—Abstracts of Dissertations. University of Cambridge.

- a. WINSLOW, R. D., 1956.—“The hatching responses and host ranges of some root eelworms (*Heterodera* spp.).” Year 1953-54, pp. 6-7.
- b. HEYES, J. K., 1956.—“Chemical studies on the potato eelworm hatching factor.” Year 1953-54, pp. 227-228.

329—Acta Medica et Biologica. Niigata.

- a. ITO, J. & INAIZUMI, T., 1956.—“The *in vitro* action of a human serum on the infective larvae of *Trichostrongylus orientalis*.” 4 (3), 265-269.

(329a) The serum from only one of four persons infected with *Trichostrongylus orientalis* caused the formation of precipitates on the sheath of the infective larvae. Serum from the same patient one month later caused no precipitation, indicating that the reaction is associated with a certain stage of the infection. No precipitates were formed on larvae in the sera of two persons who were not infected with *T. orientalis*.
S.W.

330—Acta Parasitologica Polonica.

- a. CZAPLIŃSKI, B., 1956.—“Hymenolepididae Fuhrmann, 1907 (Cestoda) parasites of some domestic and wild Anseriformes in Poland.” 4 (8), 175-373. [Polish & Russian summaries pp. 359-373.]
- b. BEZUBIK, B., 1956.—“Helmintofauna dzikich kaczek (podrodz. Anatinae).” 4 (9/19), 407-510. [English & Russian summaries pp. 499-510.]
- c. JEŁSKA, A., KŁAPKOWSKA, K. & MILEWSKA, D., 1956.—“Zarażenie pasożytami jelitowymi dzieci w wieku przedszkolnym na terenie miasta Krakowa.” [Intestinal helminth infections of children of nursery school age in Cracow.] 4 (9/19), 511-520. [French & Russian summaries pp. 519-520.]
- d. STEFAŃSKI, W., 1956.—“Les relations biocénétiques entre la faune parasitaire et la flore bactérienne du tract digestif. II. Le rôle des helminthes dans la transmission du rouget du porc.” 4 (9/19), 521-554. [Polish & Russian summaries pp. 547-554.]
- e. FURMAGA, S., 1956.—“*Plagiorchis stefaniskii* sp.n. and *Plagiorchis raabei* sp.n. parasites of field rodents (Rodentia).” 4 (9/19), 583-600. [Polish & Russian summaries pp. 595-600.]
- f. ŻARNOWSKI, E., 1956.—“Fox (*Vulpes vulpes* L.) as a natural host of the fluke *Mammorchipedium isostomum* (Rudolphi, 1819)—syn. *Orchipeum isostomum* (Rudolphi, 1819).” 4 (9/19), 609-618. [Polish & Russian summaries p. 618.]
- g. ZARZYCKI, J., 1956.—“Nieznany sposób samoobrony żywiciela przy zarażeniu włośniami.” 4 (9/19), 619-626. [English & Russian summaries pp. 626.]
- h. TARCZYŃSKI, S., 1956.—“Badania nad morfologią i cyklem rozwojowym europejskiej formy węgora świńskiego *Strongyloides ransomi* Schwartz et Alicata, 1930.” 4 (9/19), 627-661. [English & Russian summaries pp. 658-661.]
- i. TARCZYŃSKI, S., 1956.—“Robaki pasożytnicze świń i dzików w Polsce.” 4 (20/23), 663-779. [English & Russian summaries pp. 751-779.]
- j. GUTTOWA, A., 1956.—“Próba eksperymentalnego ustalenia głównego pierwszego żywiciela pośredniego bruzdogłowca szerokiego—*Diphylobothrium latum* (L.)—dla terenu Polski.” 4 (20/23), 781-802. [English & Russian summaries pp. 797-802.]

(330a) This work on Hymenolepididae of domestic and wild Anseriformes in Poland deals with 34 species found in nine kinds of birds. There are 17 new host records. Twelve species are reported for the first time from Poland and five species are new: (i) *Diorchis* (*Diorchis*) *stefaniskii* n.sp. from the domestic duck and goose, the wild duck, *Chaulelasmus*

streperus and *Nyroca rufa*; (ii) *D. (Nudiorchis?) danutae* n.sp. from *N. rufa*; (iii) *Hymenolepis paracompressa* n.sp. from the domestic duck and goose, the wild duck, *N. rufa*, *N. ferina* and *Querquedula querquedula*; (iv) *H. spiralibursata* n.sp. from the wild duck, *N. rufa*, *N. ferina* and *Q. querquedula* and (v) *Sobolevicanthus wisniewskii* n.sp. from *N. rufa* and *N. ferina*. Using his own material and data from the literature Czapliński presents a systematic account of the tapeworms, giving their synonyms, hosts, geographical distribution, frequency and time of occurrence and describing and illustrating their morphology. He has analysed the present systematic conceptions proposed for hymenolepidids, but in view of the incomplete knowledge of their morphology and biology suggests that the genus *Hymenolepis* Weinland, 1858 *sensu lato* should be retained for most avian tritesticular hymenolepidids, acknowledging *Echinocotyle*, *Orlovilepis*, *Sobolevicanthus*, *Sphenacanthus*, *Dicranotaenia* and *Drepanidotaenia* (the last three as diagnosed by Spasski & Spasskaya, 1954) as independent genera. *Tschertkovilepis setigera*, the only species in this genus, is placed in *Hymenolepis* s.l. and *Bisaccanthes bisaccata*, the only species in its genus, is transferred to *Sobolevicanthus*, which also contains *S. krabbeella* (Hughes, 1940) n.comb. and *S. stolli* (Brock, 1941) n.comb. The author makes the following synonyms: *Aploparaksis pseudofurcigera* of *A. furcigera*; *Drepanidotaenia lobata* of *D. lanceolata*; *Hymenolepis globulosa* of *H. teresoides*; *H. villosoides* of *H. arcuata*; and *Dicranotaenia coronula micracantha*, *D. pseudocoronula*, *Weinlandia macrostrobiloides*, *W. introversa*, *H. mergi* and *H. apcaris* synonyms of *D. coronula*.
G.I.P.

(330b) This helminth survey of 278 ducks representing 10 species of Anatinae and including 159 *Anas platyrhynchos* was made in eastern Poland during six years. Tabulated results, dealing with each kind of duck separately, show that 58% of the ducks were infected with cestodes, 33% with acanthocephalans, 23% with trematodes and 9% with nematodes. The incidences of infections for the twelve months are given in tables and show a peak in July for the ducks generally and in May for *A. platyrhynchos*. The height of infection is in most cases related to the availability to the ducks of animal food, particularly small crustaceans. In the systematic part of the paper, the morphology, development, hosts, distribution and occurrence in Poland are given for each of the 36 helminths found. 14 species are reported for the first time for Poland. The parasites are listed under their hosts. The following are new host records: *Querquedula querquedula* for *Hypoderaeum conoideum*, *Nyroca nyroca* for *Porrocaecum crassum* and *Anas platyrhynchos* for *Echinoparyphium nordiana*, *Tylodelphys excavata*, *Orchipedum tracheicola*, *Diorchis ransomi* and *Acanthocephalus ranae*.
G.I.P.

(330d) A number of experiments were made to determine if helminths facilitate the entry of erysipelas into swine. 21.9% of mice died from this fever after feeding on bread moistened with *Erysipelothrix rhusiopathiae* culture and 100 to 8,000 eggs of *Ascaris suum*, but the results were the same as in the controls which had received the bread and culture only. Similarly, none of eight pigeons developed fever after intubation of infective eggs of *Ascaridia columbae* (the habitat of which is similar to that of *Oesophagostomum dentatum* in pigs) followed by *E. rhusiopathiae*. When, however, faecal matter containing 100 to 1,000 larvae of *Strongyloides papillosus* of sheep (in place of *S. ransomi* of pigs) and moistened with the *Erysipelothrix* culture was applied to a shaven portion of the skin of mice, 23 out of 35 died of the fever, and only four out of the 35 controls which were subjected to faeces containing only the culture. These results were confirmed on three experimental and two control piglets. They once again demonstrate that the entry of *E. rhusiopathiae* is through the skin. Attention is drawn to the distinct correlation between the epizootiology of strongyloidiasis and that of swine erysipelas.
G.I.P.

(330e) *Plagiorchis (Multiglandularis) stefanski* n.sp. in *Apodemus sylvaticus* and *A. agrarius*, and *P. (Plagiorchis) raabei* n.sp. in *A. agrarius* from the Lublin district, Poland, are described and figured. *P. stefanski* is mainly characterized by the size of the body, the presence of cuticular spines on its anterior half, the long cirrus pouch (0.478-0.535 mm.) and the well developed vitellaria which extend laterally from the posterior end to the pharynx where they join medially. *P. raabei* is narrower, has poorly developed vitellaria which do not

join medially and the uterus contains only a small number of eggs. It differs from *P. proximus* by the larger pharynx, smaller ventral sucker and the cuticular spines which cover the anterior half, not two-thirds, of the body. The measurements of the two new species are tabulated against those of six related species of *Plagiorchis*. G.I.P.

(330f) *Vulpes vulpes* from near Lublin is reported for the first time as the natural definitive host of *Mammorchipedium isostomum*. The mature worms are described and compared with the descriptions of specimens experimentally reared in a number of carnivorous mammals by Dollfus, Callot & Desportes in 1935. G.I.P.

(330g) In addition to the usual reaction of muscular fibres in the duodenum of white mice experimentally infected by *Trichinella spiralis* larvae, i.e. that of granular disintegration and thickening of the fibre wall leading to cyst formation, Zarzycki describes a second, rarer, reaction which is associated with a particularly heavy infection. In some fibres entered by the larvae vacuoles formed which increased and united while the larva proceeded to shrink. The difference in the two reactions was most clearly seen from the 15th day after infection. By the 17th day the larvae had disappeared and the fibres were disintegrating. G.I.P.

(330h) Tarczyński describes the females and larval stages of the European form of *Strongyloides ransomi*. As his specimens agree morphologically with the descriptions by Reisinger (1915) and Malign (1937) of *S. suis* (Lutz, 1885) Linstow, 1905 and with those by Schwartz & Alicata (1930 and 1935) of the American form of *S. ransomi*, he makes these two species identical. The alleged difference in the tail length of the two species is valueless in view of the great individual tail variation observed by the author in the European form. He points out that the specific name of *S. ransomi* is still open to question but that the older name "*suis*" is unacceptable as it cannot be ascribed to Lutz. Tarczyński has attempted to trace the life-cycle of the European form experimentally but was also unable to breed mature worms; the larval stages fully agreed with those of the American form. G.I.P.

(330i) Tarczyński lists the 16 adult and three larval species of helminths found at autopsy of 268 pigs and 61 wild boars from various districts in Poland. He describes all the adult species, supplementing some anatomical details, and discusses each infection. The fauna of the wild boars was specifically richer but the pigs were more intensely infected with the common nematodes. The economically important species for Poland were *Strongyloides ransomi*, *Ascaris suum*, *Oesophagostomum dentatum* and occasionally *Metastrongylus elongatus* and *M. pudendotectus*. The infections of Suidae in Poland are compared with those in other countries. G.I.P.

(330j) To find the most important crustacean hosts of *Diphyllbothrium latum* in Poland, 16 species of copepods (collected from lakes and small water reservoirs) were exposed for 10 to 60 minutes to *D. latum* oncospheres and subsequently examined for intensities of infection and larval development. *Diaptomus vulgaris* was established as the main intermediary with high extensity and intensity of infection and in which the fastest development to the proceroid took place. The females of *D. vulgaris* were more infected than the males. *Cyclops strenuus strenuus* juveniles and *D. gracilis* became highly infected but no proceroids developed, while the remaining species, belonging to *Macrocyclus*, *Eucyclops*, *Acanthocyclops* and *Mesocyclops*, did not become infected. The author points out that as under different geographical conditions different copepods may be the main intermediaries, a grouping of the hosts according to their importance (as proposed by Michajłow in 1932, 1938) irrespective of their geographical area does not present a true picture of the bionomics of *Diphyllbothrium latum*. G.I.P.

331—Acta Physiologica Sinica.

- a. TSEN, Y. L., CHU, C. C., CHIH, C. C., LIANG, Y. & TING, K. S., 1956.—[Studies on antibilharzial drugs. I. Experimental therapy *per os* of 8 new compounds with dithia-dihydrostibiol structure in mice.] 20 (3), 125–132. [In Chinese: English summary p. 132.]
- b. LIANG, Y., CHU, C. C., CHIH, C. C., TSEN, Y. L. & TING, K. S., 1956.—[Studies on antibilharzial drugs. II. Effect of 5 drugs on the toxicity and therapeutic activity of tartar emetic.] 20 (3), 133–143. [In Chinese: English summary p. 143.]
- c. CHU, C. C., CHIH, C. C., TSEN, Y. L., LIANG, Y. & TING, K. S., 1956.—[Studies on antibilharzial drugs. III. Investigations on some routine procedures in experimental therapy.] 20 (3), 144–150. [In Chinese: English summary p. 150.]

(331a) Of the eight dithia-dihydrostibiol compounds tested against *Schistosoma japonicum* in mice, two appeared to have a greater activity than tartar emetic. All drugs were given orally. The formulae of the two active compounds are given. S.W.

(331b) The authors have shown that the toxicity of tartar emetic to mice could be markedly reduced by injecting procaine, sodium phenyl acetate, sodium α,α' -dimercaptosuccinate or sodium mercaptosuccinate simultaneously. None of these decreased the therapeutic activity against *Schistosoma japonicum* and procaine appeared to augment it. S.W.

(331c) Chu *et al.* present data indicating (i) that there were no significant differences in the percentages of *Schistosoma japonicum* recovered from white mice exposed to cercariae for 10, 15, or 20 minutes although fewer worms were found in those exposed for only five minutes, (ii) that it is unnecessary, during screening tests, to keep mice for more than one week after dosing with antimonials, (iii) that equal numbers of male and female mice should be used as at some dosages tartar emetic appeared to remove more worms from the females and (iv) that the body-weight of the mice appeared to have an effect on the number of worms remaining only when the mice were kept for three weeks after dosing. S.W.

332—Acta Tropica. Basle.

- a. TEUSCHER, E. & STÜNZI, H., 1956.—“Über parasitologische Kotuntersuchungen bei Säugetieren des Zoologischen Gartens Zürich.” 13 (3), 262–269.

(332a) Teuscher & Stünzi give in a table the results of faecal examination of 72 species of mammals in the Zürich Zoo: a total of 276 specimens was examined. In the Simiae, *Enterobius*, *Ancylostoma*, *Trichuris*, *Oesophagostomum* and *Strongyloides* and, once, *Cooperia* sp. were found. In Artiodactyla, trichostrongyles and metastrongyles were most common although *Axis axis* and *Boselaphus* were free of helminths. Ascarids were rare in equines although *Strongylus* and *Trichonema* were common. Some carnivores were completely negative although in others ascarids and hookworms were not uncommon. A footnote states that during histological examination an incidental finding of *Trichinella* in the musculature of a musang, *Paradoxurus hermaphroditus*, was reported. A.E.F.

333—Acta Veterinaria. Budapest.

- a. NEMESÉRI, L., 1956.—“Untersuchungen über die Häufigkeit von Mikrofilarien in Pferdeaugen und ihre pathologische Bedeutung.” 6 (1), 105–113. [Russian summary p. 113.]
- b. KOTLAN, A. & KASSAI, T., 1956.—“Behandlung der verminösen Bronchopneumonie der Schafe mit Emetinhydrochlorid.” 6 (1), 115–132. [Russian summary p. 132.]
- c. SPASSKI, A. A., 1956.—[Remarks on the anatomy and systematic position of *Perutaenia threlkeldi* (Cestoda: Anoplocephalidae).] 6 (1), 133–140. [In Russian: English summary pp. 139–140.]
- d. SPASSKAYA, L. P., 1956.—[Avian cestodes in Yakutsk.] 6 (2/3), 287–312. [In Russian: German summary pp. 311–312.]
- e. MATOFF, K., 1956.—“Über das Passieren der Jungtrichinellen durch den Ductus thoracicus.” 6 (2/3), 333–342. [Russian summary p. 342.]
- f. SZÉKY, A. & NEMESÉRI, L., 1956.—“Beiträge zur Pathohistologie der Trichinellose auf Grund experimenteller Untersuchungen.” 6 (4), 361–372. [Russian summary pp. 371–372.]
- g. EGYED, M. & HOLLÓ, F., 1956.—“Investigation of toluene and Gastin for effectiveness in ascaridosis.” 6 (4), 419–427. [Russian summary p. 427.]

- h. KOBULEI, T., 1956.—“Beiträge zur Biologie des *Amidostomum anseris* (Zeder, 1800).” 6 (4), 429-449. [Russian summary pp. 448-449.]
- i. BORAY, J., 1956.—“Parenterally administered carbon tetrachloride to treat acute fasciolosis in sheep.” 6 (4), 469-473. [Russian summary p. 473.]

(333a) Nemeséri bases his studies of the pathological significance of microfilariae in the eyes of horses on an examination of 216 animals slaughtered at the Budapest horse abattoir. In 170 of the horses living *Onchocerca cervicalis* microfilariae were found in the ligamentum nuchae; in 125 larvae were also present in the eye. Chronic inflammatory changes were seen in the eyes of 48 horses. In 130 of the 168 horses with healthy eyes microfilariae were present in the ligamentum nuchae and in 97 they were found in the eyes. Moderate or light eye infections do not give rise to “moon blindness” and while heavy infections are often associated with this disability it cannot yet be stated with certainty that *Onchocerca cervicalis* larvae are the primary cause of it. A.E.F.

(333b) Kotlán & Kassai have carried out *in vitro* and *in vivo* tests to determine the efficacy of emetine hydrochloride against sheep lungworms. *Protostrongylus rufescens* adults were killed *in vitro* by a 1:100 solution in three hours and by a 1:100,000 solution in 20 hours. Intra-muscular injection of 3 mg. per kg. body-weight was 73% effective in eliminating *Protostrongylus* from sheep, and 82.6% effective against *Cystocaulus*. Emetine hydrochloride was ineffective against *Dicyocaulus filaria*. A dose of 6 mg. per kg. was lethal to sheep. In view of the fact that emetine hydrochloride sometimes causes loss of wool, and because weakly sheep are particularly sensitive, it is not recommended for the treatment of verminous bronchopneumonia. A.E.F.

(333c) From Parra's description in 1953 of *Perutaenia threlkeldi* from *Lagidium peruanum* [for abstracts see Helm. Abs., 22, Nos. 110b & 893a], Spasski concludes that the vitelline gland is not absent but has been mistaken by Parra for the ovary while the organ described as the early uterus is in fact the ovary. He emends the diagnosis of *Perutaenia* accordingly and finding great similarity between *P. threlkeldi* and *Bertia forcipata* suggests their identity. The two species come from the same locality and host species and Spasski points out that it is very rare for closely related anoplocephalids to be parasitic in the intestine of the same host. Although *B. forcipata* is 130 mm. long and *P. threlkeldi* only 14 mm., the small size of the latter may be due to the heavy infection. The smallest species in Anoplocephalinae is *Paranoplocephala brevis* and not *Perutaenia threlkeldi* as stated by Parra. Until the identity of the two species can be proved Spasski transfers *B. forcipata*, as a second species, to *Perutaenia*. G.I.P.

(333d) Of 227 birds (belonging to ten orders and excluding Anseriformes) collected in Yakutsk, 65 were infected with 24 cestode species. The birds are listed with their infections. New descriptions are given for *Davainea proglottina*, *Railletina frontina*, *Dilepis undula*, *Paricterotaenia porosa*, *P. sleswicensis*, *Anomotaenia citrus*, *A. nymphaea* and *A. constricta*. G.I.P.

(333e) Matoff reports the finding of *Trichinella* larvae in the thoracic duct of five out of seven dogs seven to nine days after experimental infection. It is now assumed that larvae reach the striated muscles via the mesenteric lymph vessels, the regional mesenteric lymph nodes, the thoracic duct, the vena cava, the venous circulation and finally the arterial circulation. A.E.F.

(333f) Széky & Nemeséri have studied the changes in the diaphragm and masseters of rats experimentally infected with *Trichinella*. The rats were sacrificed at intervals from the sixth day up to the eighth month after infection. Larvae were first found in the striated muscles on the seventh day. Infected muscle fibres and sarcolemma nuclei degenerate and a diffuse myositis develops: degenerate fibres and dead larvae are resorbed. The muscle fibres surrounding encoiled larvae become spindle-shaped and later the formation of a covering con-

sisting of collagen fibres can be observed. The capsule has two parts—the detritus surrounding the larva and the covering of connective tissue. Glycogen accumulates in the encoiled larvae.

A.E.F.

(333g) Egyed & Holló report that Gastin (containing 6.4 ml. benzene, 0.096 ml. allyl isothiocyanate, 1.36 ml. petroleum and 0.16 ml. creosote per capsule) was ineffective against *Parascaris equorum* in eleven of twelve horses treated. Toluene in a dosage of 0.4 ml. per kg. body-weight eliminated ascarid infection from all but one of 30 horses and from all of three dogs treated. Toluene is cheap and is well tolerated: it is considered to be a highly efficient drug against equine and canine ascarids.

A.E.F.

(333h) Kobulei has studied the embryonal and post-embryonal development of *Amidostomum anseris*. Embryonal development takes 12 hours at 30°C. and not more than 24 hours at 16°C. to 24°C. The first and second ecdyses take place within the egg-shell and are completed within 80 hours. Third-stage larvae usually retain the first and second cuticle: they can survive three to four weeks, and in water at 0°C. they can live for as long as two months. Neither ova nor larvae survive 30 to 60 hours' desiccation.

A.E.F.

(333i) Boray has treated two flocks of sheep severely infected with fascioliasis with carbon tetrachloride. The first, some 323 animals (average weight 30 kg.), were given 2 ml. subcutaneously behind the left elbow: the second flock, of 350 sheep, were given 1 ml. per 10 kg. body-weight intramuscularly into the thigh. Improvement in appetite and condition were noted within a few days. Six weeks after treatment a mild infection was found in only 10% of the sheep.

A.E.F.

334—Acta Zoologica. Budapest.

- a. ANDRÁSSY, I., 1956.—“Die Rauminhalts- und Gewichtsbestimmung der Fadenwürmer (Nematoden).” 2 (1), 1-15. [Russian summary p. 15.]

(334a) Andrassy discusses methods of determining the volume and weight of free-living nematodes. Because of their small size weight cannot be determined directly. In the past models or complicated mathematical calculations have been used. By means of liquids of different known specific gravities Andrassy has determined the specific gravity of nematodes to be 1.082-1.086 (Mean 1.084). The volume of a nematode can be calculated from the formula $V = \frac{a^2b}{1.7}$ and the weight, $G = \frac{a^2b}{1.7} \times 1.084$ where a = greatest body width and b = body

length. The value for V is in cubic microns (μ^3) and $G = \frac{a^2b}{16 \times 100,000} \gamma$. The errors of these methods as compared with the older ones are of the order of 1-2%. The use of the value for the greatest width instead of the mean width reduces the calculations and makes very little difference to the final result. A list is given of weights of adult females of 50 different nematode species ranging from *Monhystera simplex*, 0.025 γ , to *Dorylaimus stagnalis*, 15.001 γ .

M.T.F.

335—Acta Zoológica Mexicana.

- a. CABALLERO Y C., E., 1956.—“Un caso humano de cenurosis cerebral en México.” 1 (13), 7 pp. [English summary p. 6.]

336—Ärztliche Forschung.

- a. WINTER, H. & STENDER, H. S., 1956.—“Die Beeinflussung parasitär bedingter Hypereosinophilien durch ACTH und Cortison.” 10 (10), 1/473-1/477. [English summary p. 1/473.]

(336a) Winter & Stender have studied the effect of ACTH and cortisone on hyper-eosinophilia caused by parasitic infections. They report that there is no regular eosinopenia reaction and explain this negative result by the fact that massive helminth infections lead to strong participation of the reticulo-endothelial system.

A.E.F.

337—Ärztliche Wochenschrift. Berlin.

- a. SCHÄFFNER, E., 1956.—“Eosinophiles Leukämoid durch Trichocephalusallergie.” 11 (18), 396–399.

(337a)* Schäffner reports the case of a 48-year-old woman with 68% eosinophilia, leucocytosis, enlargement of the liver and spleen, and subfebrile bouts who was found to have a fairly heavy Trichuris infection. After treatment with a proteolytic enzyme preparation the blood picture improved markedly. The differential diagnosis of the condition, which is considered to be an allergy set up by Trichuris, is discussed.

A.E.F.

338—Agricultural Review. London.

- a. JARRETT, W. F. H., MCINTYRE, W. I. M. & URQUHART, G. M., 1956.—“Husk and false husk in cattle.” 2 (3), 32–36.
b. SOUTHEY, J. F., 1956.—“The cereal root eelworm.” 2 (7), 39–40.

339—Agronomy Journal.

- a. FINKNER, R. E. & SWINK, J. F., 1956.—“Breeding sugar beets for resistance to nematodes.” 48 (9), 389–392.

(339a) The resistance of sugar-beets to the sugar-beet nematode (*Heterodera schachtii* Schmidt) was measured by the sugar yield of the roots. A moderate level of resistance was found in varieties currently grown in America. Plants selected for nematode resistance were not inferior to a commercial variety in root yield. High galactinol content of the roots was correlated with low root yields; the authors suggest that it may be associated with resistance to the nematode.

J.J.H.

340—American Journal of Clinical Pathology.

- a. AREÁN, V. M., 1956.—“Lesions caused by *Schistosoma mansoni* in the genito-urinary tract of men.” 26 (9), 1010–1021.
b. PRICE, S. G. & WEINER, L. M., 1956.—“Use of hemagglutination in the diagnosis of trichinosis.” 26 (11), 1261–1269.

(340b) Price & Weiner describe a modification of the haemagglutination test which shows great promise for the diagnosis of trichinelliasis. Their data indicate that it is at least 100 times more sensitive than complement fixation tests and 300 times more sensitive than the precipitin ring test in determining anti-Trichinella antibodies. Of the 50 specimens of sera so far tested none has yielded a false positive reaction but the authors emphasize that further tests must be performed before its reliability is established.

S.W.

341—American Journal of Pathology.

- a. GOULD, S. E., GOMBERG, H. J., VILLELLA, J. B. & HERTZ, S., 1956.—“Morphologic changes produced in adult trichinae by gamma radiation.” [Abstract of paper presented at the 53rd Annual Meeting of the American Association of Pathologists and Bacteriologists, Cincinnati, April 26–28, 1956.] 32 (3), 624–625.
b. SCHMIDT, E. C. H. & RICHTER, C. P., 1956.—“Cirrhosis of the liver in wild rats.” [Abstract of paper presented at the 53rd Annual Meeting of the American Association of Pathologists and Bacteriologists, Cincinnati, April 26–28, 1956.] 32 (3), 633.

(341a) Doses of 12,000 to 15,000 r. of cobalt-60 and 3,000 to 4,000 of X-ray caused a reduction in size and especially length of adult Trichinella. Six days after females were exposed to 2,000 to 4,000 r. of X-ray, few females were inseminated and the egg cells were undergoing degeneration. After 4,000 r. the males and females were stunted, the cuticle of the females became thickened with nodular swellings and the ovaries showed extensive degeneration and shrinking. The obstruction of the vagina and vulva by the degenerated and disintegrated egg cells may have prevented insemination.

R.T.L.

(341b) A diffuse cirrhosis in the liver of the larger and older rats captured in Baltimore was associated with the presence of *Capillaria hepatica* and its ova.

R.T.L.

342—American Midland Naturalist.

- a. VOGUE, M., 1956.—“A list of nematode parasites from California mammals.” **56** (2), 423-429.

(342a) The 64 species of nematodes known (from published work or unpublished information) to occur in 33 mammalian species in California are listed. They are also arranged under their hosts. The parasite list indicates new locality records within the State and first reports for the State.

R.T.L.

343—Anais do Instituto de Medicina Tropical. Lisbon.

- a. FRAGA DE AZEVEDO, J. & CARVÃO GOMES, F., 1956.—“Estudo da eficácia e modo de acção de alguns moluscocidas. (Nota prévia).” **13** (4), 579-587. [English & French summaries p. 587.]
- b. JANZ, G. J. & CARVALHO, A. M. DE, 1956.—“Subsídios para o conhecimento das bilharzioses em Angola.” **13** (4), 597-613. [English & French summaries pp. 612-613.]
- c. SOEIRO, A. & MORAIS, T. DE, 1956.—“O estado actual do problema das bilharzioses humanas na Africa Oriental Portuguesa.” **13** (4), 671-678. [English & French summaries p. 677.]
- d. MORAIS, T. DE, 1956.—“Subsídios para o estudo dos moluscos vectores da bilharziose na Zambézia (Moçambique).” **13** (4), 883-899. [English & French summaries p. 899.]
- e. CARVÃO GOMES, F. & SILVA XAVIER, A., 1956.—“A propósito de um novo caso de fasciolíase hepática humana: ensaio sobre a técnica de fixação do complemento para diagnóstico serológico.” **13** (4), 901-910. [English & French summaries p. 910.]

(343a) For a comparative study on the efficiency of six molluscicides, *Helisoma duryi normale* was exposed to Tetramide A, 2-methyl-1,4-naphthoquinone, benzene hexachloride and copper sulphate, and *Physa acuta* was subjected to 2,3,4,6-tetrachlorophenol and pentachlorophenol. Each chemical was dissolved in 95% alcohol and then diluted in water to concentrations of 20 p.p.m., 10 p.p.m. and 5 p.p.m. The most efficient chemical was copper sulphate followed by 2-methyl-1,4-naphthoquinone, pentachlorophenol, 2,3,4,6-tetrachlorophenol and benzene hexachloride. Tetramide A was scarcely effective. Six photomicrographs illustrate the degenerative changes induced by the molluscicides.

M.MCK.

(343b) In this summary of the details obtained to date on schistosomiasis in Angola, Janz & Carvalho tabulate the incidence of *Schistosoma haematobium* infection among Bantu examined in different districts. The incidence quoted from the literature for three localities in 1942 and 1956 rises from 22.9% to 100%, 17.5% to 87.8% and 7.5% to 63.3% respectively. In 33 infected and 98 uninfected people the blood pictures and the eliminations of thiamine, riboflavin, n-methylnicotinamide and ascorbic acid via the urine were not significantly different. *S. mansoni* has only once been reported in Angola. Five more cases are now mentioned. 78.1% of 258 cattle examined on one farm had schistosome infection. Of the eight molluscan species which have been suspected as schistosome vectors in Angola, 38.9% of 1,808 *Bulinus* (*Physopsis*) *africanus* and *B. (P.) globosus* and 1.3% of 290 *B. (Pyrgophysa)* spp. were found infected with human-type schistosome cercariae. A map shows the distribution of seven molluscan species as known in 1956. When infected children urinated into artificially constructed outdoor snail habitats, 100% of *B. africanus* and *B. globosus* and 1% of *B. (Pyrgophysa)* spp. became infected but *B. (Pyrgophysa)* spp. were never seen eliminating cercariae spontaneously.

M.MCK.

(343c) Soeiro & Morais bring together details about human schistosomiasis in Mozambique from the literature and from papers in the process of publication. They verified that *Bulinus* (*Physopsis*) *globosus*, *B. (P.) africanus*, *B. nasutus*, *B. (Pyrgophysa) forskali* and *Biomphalaria pfeifferi* are present. In Manica, Sofala and Zambezia, as in Sul do Save, vesical schistosomiasis has a higher incidence and is more uniformly distributed than intestinal schistosomiasis. The Institute of Medical Investigation of Mozambique has established a pilot zone for the study of medical and molluscicidal control measures in the region of the Limpopo valley which is becoming an important centre for European settlers.

M.MCK.

(343d) *Bulinus* (*Physopsis*) *globosus*, *B. (P.) africanus* and *Biomphalaria pfeifferi* were identified in a survey of 142 localities in Zambezia, Mozambique. Search was confined mainly to collections of water supplying those human populations which had been surveyed for

schistosomiasis. The *Bulinus* specimens constituted 90% of the eight species collected and both *Bulinus* species were present in all the administrative districts except Pebane and Namarroi, where no molluscs were found (in spite of high incidences of schistosomiasis). Morais maps the distribution of the snails and tabulates details of shell morphology of the three species considered to be vectors. Of the vectors, only *B. globosus* and *B. africanus* were infected with cercariae and these had simple or forked tails. The cercariae are figured, their measurements are given and the incidences of the two types in each of 24 localities are tabulated. M.MCK.

(343e) Globulin and glucid antigens of *Fasciola hepatica* (prepared by following or adapting Piettre's methods) were of no diagnostic value when tested on a patient with *F. hepatica* infection. Whole worm antigen prepared by Fairley's method was tested on the same patient and was positive at a titre of 1:150 in the complement fixation test used (which was an adaptation of Kolmer's technique) and produced a quick positive reaction in the skin test. M.MCK.

344—Anales de la Facultad de Medicina de Montevideo.

- a. BELLO, R. DI, 1956.—“El electrocardiograma en la equinococosis cardíaca. Trabajo basado en 50 observaciones de la literatura mundial.” 41 (1/2), 16-45. [English summary pp. 41-42.]
- b. BELLO, R. DI, 1956.—“Pericarditis hidática aguda. Nuevo trabajo de conjunto basado en 19 observaciones.” 41 (5), 151-158. [English summary p. 157.]
- c. BELLO, R. DI, 1956.—“Contribución al estudio del quiste hidático del ventrículo izquierdo. Trabajo basado en 94 observaciones de la literatura mundial.” 41 (6), 235-250. [English summary pp. 245-246.]

345—Anales del Instituto de Biología. Mexico.

- a. BRAVO H., M., 1956.—“Tremátodos de peces marinos de aguas mexicanas. XI. Estudio de 17 digéneos de las costas del Pacífico, incluyendo seis especies nuevas y un género nuevo.” 27 (1), 245-277.
- b. CABALLERO Y C., E., 1956.—“Hirudíneos de México. XX. Taxa y nomenclatura de la clase *Hirudinea* hasta géneros.” 27 (1), 279-302. [English summary pp. 297-298.]
- c. CABALLERO Y C., E., 1956.—“Presencia de *Paragonimus rudis* (Diesing, 1850) Braun, 1899 en mamíferos silvestres en Centroamérica.” 27 (2), 397-401.
- d. WINTER, H. A., 1956.—“Tremátodos de peces marinos de aguas mexicanas. XII. Dos géneros de digéneos (Lepocreadiidae) incluyendo una nueva especie procedente de *Kyphosus elegans* (Peters) de las Islas Tres Marias, en el Océano Pacífico.” 27 (2), 403-413. [English summary pp. 412-413.]
- e. CABALLERO Y C., E., ZERECERO Y D., M. C. & GROCOTT, R. G., 1956.—“Helmintos de la República de Panamá. XIX. Algunos tremátodos de quelonios de agua dulce. (1a. parte).” 27 (2), 415-430.

(345a) In this report on 17 digenetic trematodes from fish from the Pacific coast of Mexico, Bravo describes seven new species, one of which belongs to a new genus. *Pseudolepidapedon sinaloense* n.sp., from *Balistes verres* and *B. capistratus*, closely resembles *P. balistis* but has a papillose cirrus, tandem or very slightly diagonal testes and the gonads are further apart. *Genolopa bupharynx* n.sp. from *Haemulon scudder* is characterized by an enormous muscular pharynx larger than the acetabulum and by transverse pseudo-openings on the body, level with the pharynx. *Ametrodaptes mexicana* n.g., n.sp. from *H. scudder* is unique in the Monorchidae in having a scoliceform adhesive organ, with thick muscular walls in which the oral sucker is embedded towards one side, a double crest of heavy spines and a covering of fine spines and glandular setae. *Hurleytrema longitestis* n.sp., from *Citula dorsalis* and *Argyreiosus brevoorti*, has a single and very long testis extending from the posterior half of the ovary to the most posterior uterine coils in the hind end of the body. *Hysterolecitha crassivesiculata* n.sp. from *Cirrhitis virulatus* resembles *H. rosea* but the seminal vesicle is thick-walled, the sucker ratio is 1:3 and the eggs are longer, measuring 0.034-0.04 mm. *Hysterolecithoides pseudorosea* n.sp. from *C. virulatus* is differentiated from *H. epinepheli* chiefly by the sucker ratio of 1:2.92, the inconspicuous oesophagus and the structure of the prostate. *Lecithochirium sinaloense* n.sp. from *Muraenesox comiceps* is like *L. muraenae* but differs mainly in that the seminal vesicle extends posteriorly to the acetabulum and the caeca reach within

0.1 mm. of the ecsoma; the two vitelline glands are lobed and the pre-acetabular pit is surrounded by radial muscle fibres and a few glandular cells. *Proctotrema longicaecum* is recorded from *Balistes verres* and this apparently constitutes new host and geographical records. M.MCK.

(345b) Caballero gives an emended classification of leeches. Branchelliinae is a new subfamily of Piscicolidae. The following names which are preoccupied are replaced: *Abranchus*, by *Oceanobdella* nom.nov., *Hirudinaria*, by the erstwhile synonym *Poecilobdella*, and *Cardea* by *Americobdella* nom.nov. As *Cardea* was type genus of Cardeinae, it is now necessary to substitute Americobdellinae nom.nov. for Cardeinae and Americobdellidae nom.nov. for Cardeidae. The incorrectly derived terms Glossosiphonioidea, Glossosiphoniinae and Herpobdellinae become Glossiphonioidea nom.nov., Glossiphoniinae nom.nov. and Erpobdellinae nom.nov.; Piscicolinae nom.nov. now replaces Ichthyobdellinae for which no diagnosis was, apparently, originally given. *Exochleius* and *Haemonis* are genera inquirenda. M.MCK.

(345c) In this, the second of a series of papers on the helminths of domestic and wild animals in Costa Rica, Caballero redescribes *Paragonimus rudis* which he found in the grey fox *Urocyon cinereoargenteus costaricensis*. *P. macacae* and *P. trachysauri* are now added to the synonymy of *P. rudis* given by him in *An. Inst. Biol. Univ. Méx.*, 17, p. 156 [which includes *P. westermanii* (Kerbert, 1878)]. M.MCK.

(345d) *Jeancadenatia dohenyi* n.sp., from the fish *Kyphosus elegans* caught off the north-west coast of Mexico, differs from *J. brumpti* in that it has only two accessory ventral suckers, the prepharynx measures 0.358–0.373 mm. \times 0.095–0.102 mm., the pharynx 0.224–0.238 mm. \times 0.261–0.268 mm., and the vitellaria are confluent behind the single testis. Winter emends the diagnosis of *Jeancadenatia* to include this new species. He also describes *Enenterum aureum* Linton, 1910, from *K. elegans* and gives a table of the geographical and host distribution of the lepecreadiids known in species of *Kyphosus*. M.MCK.

(345e) Three new trematodes are described from fresh-water tortoises from Panama. *Cheloniotrema tropicum* n.g., n.sp. from *Kinosternon integrum* and *K. panamensis* resembles *Stomatrema* in the position of the vitellaria but the oral sucker is much larger than the acetabulum, the gonopores open to the left of the acetabulum, level with the root of the left caecum and the two testes lie obliquely between the caeca in the posterior half of the body. The seminal receptacle is well developed and the uterus occupies the whole area from the hind edge of the acetabulum to just behind the testes. *Neopolystoma cyclovitellum* n.sp. from *Geoemyda melanosterna* is distinguished from other species with 16 hooks on the genital disc, by the small number of intercaecal vitelline follicles, which do not exceed ten and lie on a line joining the posterior ends of the caeca; by the two vaginae which extend laterally from the ootype and open almost at the sides of the body, and by the size of the testis (0.730–0.747 mm. \times 0.498–0.664 mm.) and the egg (0.232 mm. \times 0.149 mm.). *Telorchis panamensis* n.sp. from *K. panamensis* is characterized by the combination of the following: the vitellaria lie extra-caecally in groups which extend almost from the acetabulum to the testes, the cirrus sac lies between the ovary and gonopores, the ovary is intercaecal and in the anterior half of the body, the metraterm is parallel to the cirrus sac, the oral sucker and the acetabulum are about the same size. M.MCK.

346—Anales del Instituto de Investigaciones Veterinarias. Madrid.

- a. TARAZONA VILAS, J. M., 1956.—“Especies del género *Potierostomum* Quiel 1919 (Strongylidae Nematoda), parásitas de équidos españoles.” 7, 93–96. [English & German summaries p. 96.]
- b. TARAZONA VILAS, J. M., 1956.—“Contribución al estudio de la actividad antihelmíntica del fluoruro de sodio. Ensayos in vitro sobre *Ascaridia galli*.” 7, 97–101. [English & German summaries pp. 100–101.]

(346a) The genus *Potierostomum* in equines is recorded for the first time in Spain at Barbastro. One immature female of *P. imparidentatum* was found in the faeces of a mule and two mature females of *P. ratzii* were collected from the colon of a donkey. M.MCK.

(346b) Sodium fluoride solutions at concentrations of both 5% and 10% had an anthelmintic action on *Ascaridia galli* in vitro after 30 and 60 minutes, but were toxic to poultry at these concentrations.

M.MCK.

347—Anatomical Record.

- a. DOUGHERTY, E. C. & HANSEN, E. L., 1956.—“Further studies on the axenic cultivation of the nematode *Caenorhabditis briggsae* (Rhabditidae).” [Abstract of paper presented at the 53rd Annual Meeting of the American Society of Zoologists, Storrs, August 27–29, 1956.] 125 (3), 638–639.
- b. WALTON, A. C., 1956.—“Parasites of Amphibia.” [Abstract of paper presented at the 53rd Annual Meeting of the American Society of Zoologists, Storrs, August 27–29, 1956.] 125 (3), 654.

(347a) Dougherty & Hansen report that under optimal conditions of culture, on 1:1 liver protein fraction plus autoclaved liver extract, two generations of *Caenorhabditis briggsae* are produced in a minimum of eight to ten days. On two preparations of autoclaved liver extract alone the first generation appeared in 9 to 25 days; in one trial the second generation appeared in 19 days.

S.W.

348—Annales Medicinæ Experimentalis et Biologiæ Fenniae.

- a. PYLKKÖ, O. O., 1956.—“Cholinesterase in *Diphyllobothrium latum* and *Taenia saginata*.” 34 (3), 328–334.
- b. PYLKKÖ, O. O., 1956.—“Studies of the acetylcholine content and cholinesterase activity of the human-pathogenic fish tapeworm (*Diphyllobothrium latum*).” 34, Suppl. 8, 81 pp.

(348a) *Diphyllobothrium latum* and *Taenia saginata* contain at least two different cholinesterases; one is a specific acetylcholine-hydrolysing enzyme and the other is able to split benzoylcholine.

R.T.L.

(348b) Pylkkö, after reviewing earlier publications on the physiological significance of acetylcholine, on the physico-chemical properties of cholinesterase and on the biological and chemical methods of determining cholinesterase activity, describes his own investigation on the enzymic hydrolysis of certain esters by homogenates of *Diphyllobothrium latum*, tabulates the cholinesterase activity of different parts of the parasite, and details experiments on the effect of anticholinesterases on the cholinesterase activity of the tapeworm. He concludes with an account of his efforts to purify the cholinesterase of *D. latum* homogenate and he was able to demonstrate that it had no affinity to tributyrin.

R.T.L.

349—Annales de Parasitologie Humaine et Comparée.

- a. COUDERT, J. & COLY, M., 1956.—“Essai d'application de la réaction d'agglutination des particules de collodion à quelques parasitoses.” 31 (5/6), 489–499.
- b. GOLVAN, Y. J., 1956.—“Acanthocéphales d'Amazonie. Redescription d'*Oligacanthorhynchus iheringi* Travassos 1916 et description de *Neoechinorhynchus buttnerae* n.sp. (Neoechinorhynchidae).” 31 (5/6), 500–524.
- c. BIGUET, J., DEBLOCK, S. & CAPRON, A., 1956.—“Description d'une métacercarie génétique du genre *Asymphylogora* Looss, 1899, découverte chez *Bythinia leachi* Sheppard dans le nord de la France.” 31 (5/6), 525–542.
- d. CHABAUD, A. G., GOLVAN, Y. J. & ROUSSELOT, R., 1956.—“Description du trématode *Strigea geoduboisii* n.sp. parasite d'un ciconiiforme africain.” 31 (5/6), 543–551.
- e. ROMAN, E., 1956.—“Spécificité parasitaire de *Strongyloides ratti*, du surmulot. Effets de la cortisone sur l'infestation d'autres rongeurs par ce nématode.” 31 (5/6), 552–571.
- f. CHABAUD, A. G. & GRÉTILLAT, S., 1956.—“*Metastrongylus madagascariensis* n.sp., quatrième espèce de strongyle pulmonaire chez le porc domestique.” 31 (5/6), 572–577.
- g. CHABAUD, A. G. & ROUSSELOT, R., 1956.—“Nématodes parasites d'un éléphant du Moyen Congo.” 31 (5/6), 578–597.
- h. DOLLFUS, R. P., 1956.—“Un *Diplotriaeana* de galliforme (Nematoda-Filarioidea).” 31 (5/6), 663–664.
- i. CAMPANA-ROUGET, Y., 1956.—“Sur le genre *Parascarophis* Campana 1955 (Spirurinae-Nematoda).” 31 (5/6), 665–666.

(349a) Coudert & Coly describe, with some modifications, Cavelti's techniques for preparing a suspension of collodion particles and conducting serum agglutination tests on them.

Small-scale trials of the agglutination test using sera of persons infected with hydatid, liver-fluke, *Ascaris*, *Strongyloides* or tapeworms showed that lyophilized antigens were more sensitive and reliable than liquid antigens (unless the liquid antigens were very fresh and fairly concentrated). The antigen of *Strongyloides* gave unsatisfactory results at concentrations of less than 600 to 900 larvae per drop. The serum of a *Taenia* carrier agglutinated particles sensitized with hydatid or *Taenia* antigen, but that of a hydatid patient did not agglutinate particles sensitized with *Taenia* antigen.

M.MCK.

(349b) *Neoechinorhynchus buttnerae* n.sp. from the fish *Myletes macropomus* from the Amazon region differs from *N. variabilis* and *N. macronucleatus*, already described from South America, in that the proboscis hooks are arranged in six whorls of three hooks each. Golvan also reports from the Amazon region *Prosthenorchis elegans*, *Polyacanthorhynchus macrorhynchus* and *Oligacanthorhynchus iheringi*. The last species had five proboscis hooks per whorl instead of the six reported by Machado Filho. Moreover each hook was only half as long. The four species of *Oligacanthorhynchus* from South America are annotated. As *Polyacanthorhynchus* has characters of both classes of Acanthocephala, viz., Metacanthocephala and Eoacanthocephala, Golvan proposes a new family Polyacanthorhynchidae *incertae sedis* for it, until further study clarifies its position. In a table he compares the characters of *Polyacanthorhynchus* and the four orders of Acanthocephala, Palaeacanthocephala, Archiacanthocephala, Gyraacanthocephala and Neoacanthocephala.

M.MCK.

(349c) An unencysted metacercaria *Asymphylogora dollfusi* n.sp. is described and figured from the mollusc *Bythinia* [*Bithynia*] *leachi* from the north of France. It differs from *A. progenetica*, the only other progenetic metacercaria known in this genus, chiefly in that the body spines are evenly distributed and are of even size, a seminal receptacle is present and the oviduct runs forwards from the ovary. Although *B. leachi* and *B. tentaculata* (the host of *A. progenetica*) were living together, *A. dollfusi* was found only in *B. leachi*. The characters of *A. progenetica* and *A. dollfusi* are tabulated and the features distinguishing the new species from each of the 13 other *Asymphylogora* species are annotated.

M.MCK.

(349d) *Strigea geoduboisii* n.sp. is described from a white-necked stork *Dissoura episcopus microscelis* found in the Middle Congo and kept at Brazzaville Zoo. The tribocytic organ is curious in that the ventral lobe is modified into a circular pad occupying the bottom of the cavity of the anterior segment and the dorsal lobe is represented by two coiled tongues rising above the circular pad.

M.MCK.

(349e) Guinea-pigs bathed in water containing 500 to 15,000 infective larvae of *Strongyloides ratti* were resistant to infection even when injected daily with heavy doses of cortisone. Only two, which had received respectively 27.25 mg. and double this dose per kg. body-weight daily, became infected. Although young mice usually became infected when exposed to large numbers of larvae, adult mice harboured female worms for less than two weeks unless they had received cortisone. Their resistance to *S. ratti* was operative before the worms became adult, for relatively few larvae were recovered from the tissues. The larvae from a mouse treated with cortisone gave rise, in an untreated mouse, to an infection from which viable larvae were obtained.

M.MCK.

(349f) *Metastrongylus madagascariensis* n.sp. from a domestic piglet in Madagascar resembles *M. pudendotectus*, but the ventro-ventral ray of the bursa is almost perpendicular to the latero-ventral ray, the tip of the spicule is pointed, not hooked, and the vulva in the gravid female is covered only by a thin cuticular flap which is slightly swollen distally and similar to that of some *Protostrongylus* species.

M.MCK.

(349g) Three new species of Strongylidae are reported from an elephant, *Loxodonta cyclotis*, captured in the Middle Congo. *Quilonia spiculodentata* n.sp. is distinguished from other species of *Quilonia* by its relatively slender oesophagus, its large size (the male is 21 mm.-22 mm. long and the female 25 mm.-31 mm.) and the presence of a small disc on the cephalic

end, much narrower than the body and clearly separated from it. There is a large tooth near the distal end of each spicule which is absent in the most similar species *Q. africana*. In *Murshidia witenbergi* n.sp., described from two males, the dorsal lobe of the caudal bursa is relatively much shorter than in *M. bozasi*, the spicules are longer, measuring 550μ , and the oesophagus is 670μ long. *M. vuylstekae* n.sp., known from a single male, resembles *M. africana* but its externo-dorsal ray is clearly branched and the dorsal ray is much thicker. The principal measurements of *Q. spiculodentata*, *Q. africana* and *Q. magna* from the same elephant are tabulated. As the measurements of *M. linstowi* from this animal were intermediate between those previously recorded for *M. linstowi* and *M. hadia* it is probable that *M. hadia* is a synonym of *M. linstowi*. *M. elephasi* Wu, 1934 is thought to be synonymous with *M. neveu-lemairei*.
M.MCK.

(349h) *Diplotrriaena couturieri* n.sp. is described from fragments of male filariae from the grouse *Lagopus mutus helveticus* from the High Alps. The cuticle is smooth, the tridents are remarkably slender with branches 116μ long, the spicules are very unequal, measuring $1,000\mu$ and 630μ . Apparently there are no caudal alae.
M.MCK.

(349i) Campana-Rouget transfers *Filaria galeata* Linton, 1905 to *Parascarophis* as a new combination.
M.MCK.

350—Annales Pharmaceutiques Françaises.

- a. CAVIER, R. & CHASLOT, M., 1956.—“Recherches sur les propriétés anthelminthiques de quelques dérivés de la série cinnamique. I. Essais d'activité in vitro sur *Rhabditis macrocerca*.” 14 (5), 367–369.
- b. CAVIER, R. & CHASLOT, M., 1956.—“Recherches sur les propriétés anthelminthiques de quelques dérivés de la série cinnamique. II. Étude pharmacologique du cinnamate de *n*-butyle.” 14 (5), 370–373.
- c. CAVIER, R., 1956.—“Sur une nouvelle technique pharmacologique d'essai des taenifuges.” 14 (7/8), 545–552.
- d. DEBELMAS, J. & LESPAGNOL, C., 1956.—“Essais sur l'activité anthelminthique éventuelle de dérivés de la benzoxazolone.” 14 (12), 778–782.

(350a) Cavier & Chaslot have studied the anthelmintic effect of about 30 derivatives of the cinnamic series (including halogenated and methoxyl compounds) on *Rhabditis macrocerca* in coproculture. The potency of the ester series increased with increasing length of the alkyl chain up to *n*-butyl cinnamate, which was the most promising of the chemicals tested, and decreased thereafter.
S.W.

(350b) Continuing their researches on cinnamic compounds as anthelmintics, Cavier & Chaslot have demonstrated that *n*-butyl cinnamate is efficacious against *Aspicularis tetraptera* in mice and has a low toxicity. A daily dose of 100–153 mg. per kg. body-weight given for six consecutive days eliminated all the oxyurids from the mice tested. The LD₅₀ was shown to be about 7 gm. per kg., thus giving a wide margin of safety. Daily doses as large as 0.75 gm. per kg., to a total of 11.25 gm. per kg. given over about 15 consecutive days, were well tolerated.
S.W.

(350c) Cavier describes a technique for evaluating taenifuges. White mice, six to eight weeks old (older mice are less susceptible), were infected orally with a known number of mature eggs of *Hymenolepis nana* var. *fraterna*, using a small metal cannula attached to a graduated syringe. The infection rate obtained in the mice was between 78% and 100% and the numbers of cestodes recovered at autopsy was proportional to the number of eggs administered; 25 eggs in 0.25 c.c. of saline produced an average of 6.4 worms per mouse and this was the number used in testing the drugs. The infected mice were starved from 6 p.m. the day before the tests, except for 5% saccharose in the drinking water which was freely available. On the day of the test the substance under investigation was given orally in the morning in 0.25 c.c. to 0.55 c.c. of water. Four hours later they were given 0.25 c.c. of 10% sodium

sulphate (which had previously been shown to be without effect on the cestodes). The following day they were killed and examined. This method was tested using male fern extract, arecoline hydrobromide and atebirin and gave very satisfactory results, showing that the efficacy increased in direct proportion to the dose. s.w.

(350d) Debelmas & Lespagnol tested benzoxazalone, N-methylbenzoxazalone and N-allylbenzoxazalone against *Rhabditis macrocerca* in coproculture and *Aspicularis tetraptera* in mice. The results obtained were not as favourable as those obtained with other series of chemicals but the effect of the allyl chain in increasing the anthelmintic potency, which had been previously observed amongst the aromatic aldehydes and other groups, is confirmed. s.w.

351—Annales de la Société Belge de Médecine Tropicale.

- a. SCHWETZ, J., BAUMANN, H. & FORT, M., 1956.—“ Sur quelques parasites sanguicoles trouvés dans divers rats sauvages et domestiques de l'Est du Congo Belge.” **36** (5), 589–594. [Flemish summary p. 594.]
- b. BONDT, A. F. DE, 1956.—“ Contrôle biologique des mollusques d'eau douce et des maladies qu'ils transmettent.” **36** (5 bis), 667–672. [Flemish summary p. 671.]
- c. FAIN, A., 1956.—“ Cénurose chez l'homme et les animaux due à *Taenia brauni* Setti au Congo Belge et au Ruanda-Urundi. I. La cénurose chez les animaux sauvages, avec existence de localisations cérébrales.” **36** (5 bis), 673–677. [Flemish summary pp. 676–677.]
- d. FAIN, A. ET AL., 1956.—“ Cénurose chez l'homme et les animaux due à *Taenia brauni* Setti au Congo Belge et au Ruanda-Urundi. II. Relation de huit cas humains.” **36** (5 bis), 679–696. [Flemish summary pp. 686–688.]
- e. SCHWETZ, J., 1956.—“ Nouvelles recherches sur *Schistosoma intercalatum* Fisher.” **36** (6), 845–857. [Flemish summary pp. 856–857.]
- f. LIETAR, J., 1956.—“ Biologie et écologie des mollusques vecteurs de bilharziose à Jadotville.” **36** (6 bis), 919–1036.

(351a) Schwetz *et al.* record the presence of microfilariae in the blood of one *Oenomys hypoxantus* collected near Irumu. s.w.

(351b) De Bondt has found that *Haplochromis mellandi*, a fish indigenous to the Bangwelo-Luapula-Moëro basin, to the River Kawe and possibly also to the basin of Lake Ngami in Bechuanaland, can be cultured without difficulty and is very effective in destroying aquatic snails. He describes its successful use in eliminating the first intermediaries of a species of *Diplostomum* which was affecting adversely the culture of *Tilapia* in the Wangermee valley and so effecting control of the parasite. s.w.

(351c) Fain has found *Taenia brauni* to be an extremely common parasite of hunting dogs in Ruanda-Urundi and reports the coenurus in six new wild hosts, namely, *Rattus rattus rattus*, *Tachyoryctes ruandae*, *Otomys irroratus vulcanius*, *Grammomys surdaster*, *Dendromys pumilio lineatus* and *Cercopithecus mitis doggetti*; eight cases of human infection are also mentioned. In the rats the coenuri were usually found under the skin but sometimes occurred in the pleural or peritoneal cavities, the lungs or the brain and in some areas the incidence was as high as 20%. In the monkey, one coenurus was found in the brain, one in the apex of the heart and one under the skin. In man the coenuri were subcutaneous. The coenuri, which are described, differ from *Coenurus serialis* in that they never contain daughter coenuri, in the shape of the large hooks and in the host. During experimental work on the life-cycle, using mice as intermediate hosts, Fain observed young larvae leaving the eggs in the lungs, probably effecting the first stage of maturation. Although pulmonary migration is well known amongst the larvae of certain nematodes this is the first record of its occurrence in a cestode. s.w.

(351d) Fain, with the collaboration of the doctors in whose care the patients were, describes the eight cases of human infection with *Coenurus brauni* mentioned in an earlier paper [for abstract see No. 351c above]: seven were in young children (11 months to five years old) and one in a 14-year-old boy. In all, the coenuri were solitary and localized beneath the

skin, varying in size from that of an almond to that of a plum. Comparing this material with the description, by Taramelli & Dubois in 1931, of a coenurus from the arm of a woman in the Belgian Congo, Fain concludes that they are identical. S.W.

(351e) Schwetz describes how, in 1955, he examined 251 persons from the Lula plantation on the left bank of the Congo at Stanleyville and found 38.6% infected with *Schistosoma intercalatum*. Although on the whole infections were mild some were regarded as clinically serious; children and especially boys were the most heavily infected, 29 of the 46 adolescent and younger males being positive. Malacological investigation of the streams of the left bank showed infected *Physopsis* to be present in all those examined. A goat and a ewe were infected with cercariae from *Physopsis* from two of these streams and Schwetz considers *S. intercalatum* to be closely related to, if not identical with, *S. mattheei*. S.W.

(351f) Lietar introduces his monograph with a short account of human schistosomiasis, with particular reference to the Belgian Congo, and a description of the geography, hydrography, climate, chemical characteristics of the water and fauna of aquatic molluscs in the Jadotville region. The most prevalent aquatic gastropods were *Planorbis pfeifferi*, *Physopsis africana* and *Limnaea natalensis* although *Cleopatra*, *Melanoides recticosta anomala*, *Pyrgophysa forskali* and *Lanistes* sp. were also recovered. His survey, made throughout two consecutive years, was mainly concerned with the three first-mentioned species as the important schistosome and liver-fluke vectors in the district, and he has made a detailed and well illustrated investigation of the seasonal fluctuations in populations and in incidence of infection with schistosomes for the streams and ponds of the area which comprise the main habitats. The annual cycle of each of the three species of mollusc and the oecological characteristics of their habitats are described and discussed and related to the seasonal changes in the volume, rate of flow etc. of the water. Only the adult snails appeared to be susceptible to infection with the schistosomes and it was noted that while the incidence in *Planorbis* was fairly stable throughout the year (6% to 7.5%, with two peaks of 19% and 10% to 14% in June and February respectively), that in *Physopsis* (about 0.5%) did not show a regular yearly cycle and penetration by the miracidia appeared to be determined by certain oecological factors and not to depend simply on the presence of the vector. In nature *Physopsis* appeared to be far more susceptible to simple cercariae and the incidence of these infections followed the cycle of the mollusc more closely. Investigation of control methods showed copper sulphate to be more efficient as a molluscicide than sodium pentachlorophenate, and good control was also obtained by flushing. The efficiency of *Tilapia chrysii* as a predator was confirmed. S.W.

352—Annali della Sanità Pubblica.

- a. TECCE, N. & VILLARI, A., 1956.—“L'anchilostomiasi nel comune di Castellammare di Stabia. Nota I. Illustrazione clinica ed epidemiologica di un focolaio.” 17 (4), 937-947. [English, French, German & Spanish summaries pp. 946-947.]

(352a) The clinical findings and blood pictures are given of three hookworm patients from a rural zone in Italy, to the north of Castellammare di Stabia. The families of these patients and another family examined in the neighbourhood were all infected with hookworm. The humidity and carbonic anhydride and calcium carbonate content of eight soil samples taken from the vicinity of the houses are given. The high humidity maintained by irrigation and the low calcium carbonate contents were favourable to hookworm larvae. M.MCK.

353—Annals and Magazine of Natural History.

- a. BISSERU, B., 1956.—“On some cestodes from African birds, chiefly guinea-fowls.” Ser. XII, 9, 529-543.

(353a) Bisseru notes some variations and other interesting features in the morphology of eight known species of cestodes collected by leRoux in Northern Rhodesia. R.T.L.

354—Archiv für Hydrobiologie.

- a. SZIDAT, L., 1956.—“Über die Parasitenfauna von *Percichthys trucha* (Cuv. & Val.) Girard der patagonischen Gewässer und die Beziehungen des Wirtsfisches und seiner Parasiten zur paläarktischen Region.” 51 (4), 542–577. [Spanish summary pp. 571–575.]
- b. HUSMANN, S., 1956.—“Untersuchungen über die Grundwasserfauna zwischen Harz und Weser.” 52 (1/2), 1–184.
- c. KISCHKE, U., 1956.—“Die Nematoden aus der Torf-Zone der Hochmoore des Oberharzes, nebst Bemerkungen über gewisse Gruppen der terricolen Begleitfauna (Rotatoria, Acarina, Collembola).” 52 (1/2), 210–277.

(354a) Szidat has made a study of the fresh-water fish, *Percichthys trucha*, and its parasites from rivers in the Rio Negro province of Argentina. Five species of trematodes and two of nematodes were recovered, the following trematodes being new: (i) *Austrocreadium papilliferum* n.g., n.sp., placed in the Allocreadiidae, and distinguished from *Allocreadium* by the shape of the oral sucker, the spines on the anterior part of the body, the shortness of the oesophagus, and the position of the genital pore; encapsulated metacercariae of this species have been found in larvae of the lamprey, *Geotria*; (ii) *Acanthostomoides apophalliformis* n.g., n.sp. (Cryptogoniminae), which is differentiated from *Acanthostomum* by its very short prepharynx, its spherical pharynx of 0.08 mm. diameter, and its long oesophagus; (iii) *Genarches patagonicus* n.sp. which is placed provisionally in *Genarches* although further study of the Dero-genetinae may show it to be more closely related to *Dero-genoides*. Szidat finds that the parasites of *Percichthys trucha* are very closely related to those of the Palaearctic region. A.E.F.

(354b) Husmann gives a detailed report on his researches into the fauna of wells, springs and other underground waters in the valleys of the rivers Weser, Leine, Innerste and Oker (north-west Germany), carried out during 1950 to 1952. The fauna recovered included 39 species of nematodes which, with the help of A. H. Meyl of Brunswick, are listed systematically. The only new species among them has already been described by Meyl in 1954 as *Nygolaimus husmanni* [for abstract see Helm. Abs., 23, No. 333d]. A.E.F.

(354c) Kischke has recovered 49 species of nematodes from three peat bogs in the Upper Harz district of north-west Germany. The new forms described are: *Chronogaster boettgeri* n.sp., *Tylenchus* (*Tylenchus*) *davaini tenuis* n.subsp., and *Criconemoides morgense hercyniensis* n.subsp. All the other species found are described (and in many cases figured) and their systematic position discussed. A.E.F.

355—Archiv für Lebensmittelhygiene.

- a. KUHLMANN, W., 1956.—“Ergebnisse der bakteriologischen Fleischuntersuchung bei Leukose und Distomatose.” 7 (5/6), 49–50.
- b. KOTTER, L. & DEGENKOLB, E., 1956.—“Über die Entwicklung von Trichinenmikroskopen mit zusätzlicher Dunkelfeldeinrichtung.” 7 (5/6), 58–59.
- c. FIEDLER, C., 1956.—“Differentialdiagnostische Betrachtung über eine selten vorkommende Art von Verkalkung bei Miescherschen Schläuchen.” 7 (15/16), 183–184.

(355a) During the years 1952 to 1955, 339 cattle, 35 sheep and two goats slaughtered at Greifswald and found to harbour liver-fluke were subjected to bacteriological examination. *Salmonella* were found in 21 cattle and two sheep. This gives a percentage infection of 5.3 which Kuhlmann considers to be astonishingly high. In view of the apparent association of the two infections, and of the rise of food poisoning in man, he recommends that all carcasses infected with liver-fluke should be given adequate bacteriological examination. A.E.F.

(355b) Kotter & Degenkolb report on the development of new microscopes with supplementary dark field attachments which assist greatly in the inspection of samples of flesh for *Trichinella*. The “Reise-Trichinenmikroskop” produced by Leitz is especially recommended for *Trichinella* inspection work. The paper is illustrated with photographs. A.E.F.

(355c) Fiedler describes an encapsulated body at the edge of a muscle fibre of a specimen of pig flesh which resembled a sarcocyst, and in the middle of which were the remains of what appeared to be a calcified worm. In view of the age of the pig (at the most one year) and of the absence of further calcified cysts the body was diagnosed as a "sarcocyst with calcium deposits simulating a primary calcified *Trichinella*".

A.E.F.

356—Archives de l'Institut Pasteur de Tunis.

- a. VERMEIL, C., 1956.—"Prophylaxie antibilharzienne dans le secteur sub-saharien de Tunisie: étude de quelques procédés." **33** (2), 189-194.

(356a) Vermeil did not find stannous oxide or desoxybenzoin effective against *Schistosoma haematobium* in 28 schoolchildren. A thioxanthone derivative (miracil D or nilodin) gave better results but only cured eight of the 14 who completed the course of treatment. The various dosage rates are given. Sodium pentachlorophenate and phenylmercuric acetate were tested against *Bulinus contortus* in a pond fed by a sluggish stream. Both were applied in muslin bags. The phenylmercuric acetate killed a higher percentage of snails but the water had to be strongly agitated to ensure its dispersion and it appears to be less suitable than sodium pentachlorophenate for use in sluggish waters.

S.W.

357—Archives of Internal Medicine.

- a. JUNG, R. C. & FAUST, E. C., 1956.—"The treatment of intestinal parasitic infections." **98** (4), 495-504.

(357a) The efficacy of recently introduced anthelmintics is briefly summarized from published works.

R.T.L.

358—Archivos Uruguayos de Medicina, Cirugía y Especialidades.

- a. PIQUINELA, J. A., 1956.—"Contusión de abdomen. Ruptura traumática intraperitoneal de un quiste hidático de hígado." **48** (4/6), 284-289.
- b. SAN JULIÁN, J. & ARANA INIGUEZ, R., 1956.—"Nuevo método para la extirpación del quiste hidático cerebral." **48** (4/6), 290-296. [English summary p. 296.]
- c. ARDAO, H., PRADERI, L. A., TÁLICE, R. V. & PÉREZ-MOREIRA, L., 1956.—"Colecistitis parasitaria. Un caso de localización de *Taenia saginata* en la vesícula biliar." **49** (1/3), 90-99.
- d. PIQUINELA, J. A., 1956.—"Quiste hidático de hígado abierto en vías biliares. Colangiografía per-operatoria. Evacuación del quiste y drenaje, coledocostomía, colecistostomía." **49** (1/3), 143-153.
- e. BELLO, R. DI, 1956.—"Pericarditis constrictiva hidática." **49** (4/6), 210-232.
- f. LARGHERO YBARZ, P., 1956.—"Quiste hidático del ventrículo izquierdo. 10 casos tratados en el Uruguay." **49** (4/6), 327-337. [Discussion pp. 337-339.]

359—Archivos de Zootecnia. Córdoba.

- a. JORDANO, D. & DÍAZ-UNGRIÁ, C., 1956.—"*Dendrometra ginesi* (nov.gen., nov.sp.) (Cestoda Dilepididae) nueva tenia parásita de un ave de Venezuela (*Fregata magnificens*)." **5** (19), 266-271. [English summary pp. 268-269.]

(359a) [This paper has already appeared in *Noved. cient. Mus. Hist. nat. La Salle*, 1956, No. 18, 4 pp. For abstract see *Helm. Abs.*, **25**, No. 124a.]

360—Arkansas Farm Research.

- a. CRALLEY, E. M., 1956.—"A new control measure for white tip." **5** (4), 5.

(360a) When rice was drilled and the plots flooded after the plants were about three to four inches tall about 60% became infected with white tip disease, due to *Aphelenchoides oryzae*. If the plots were flooded at the time of rice emergence the control was unsatisfactory. But if the rice was seeded in water only a small percentage of nematode-infested rice hulls survived submergence for a week, and only 0.5% of the plants showed white tip. As the

nematode is seed borne, not water borne, it was unnecessary to seed every year in water. By this simple procedure, or by growing resistant varieties, or by using seed treated with hot water, rice farmers now have practical measures for controlling white tip disease. R.T.L.

361—Arkiv för Zoologi.

- a. MONNÉ, L., 1956.—“On the histochemical properties of the egg envelopes and external cuticles of some parasitic nematodes.” Ser. 2, 9 (1/2), 93–113.

(361a) Using various histochemical and staining methods, which he describes, Monné has demonstrated that the egg envelopes of a number of parasitic nematodes contain a fibrin-like or an elastin-like structural protein, or both, and that these are always subjected to polyphenolquinone tanning and sometimes also to keratinization. The cuticles also contain a fibrin-like and an elastin-like protein and the peripheral parts are subjected to polyphenolquinone tanning and, probably, to keratinization. The presence of polyphenols in various tissues was demonstrated and their physiological significance is discussed. S.W.

362—Arquivos da Faculdade de Higiene e Saúde Pública da Universidade de São Paulo.

- a. COUTINHO, J. O., 1956.—“Nota sobre a infestação experimental do *Australorbis nigricans* (SPIX) do Município de São Paulo, pelo *Schistosoma mansoni*.” 10 (1/2), 61–64. [English summary p. 64.]

(362a) None of several hundred *Australorbis nigricans* from Santos and *A. glabratus* from Paulista [Recife in English summary] in Pernambuco, and Jacarêzinho, Paraná (endemic schistosome areas) in Brazil, and none of 15 *A. centimetralis* from Veneza, Ceará, acquired *Schistosoma mansoni* when exposed to infection. Laboratory stocks of *A. glabratus* derived from Paulista and of *A. nigricans* derived from Santos did acquire *S. mansoni* infections but only one of 31 and one of 20 laboratory-reared *A. nigricans* derived from São Paulo became infected. Coutinho suggests that in the region of São Paulo, where there are human carriers of schistosomiasis but infected molluscs have not been found, there is no transmission of the disease because the climate is unfavourable and *A. nigricans*, which is relatively rare, has little susceptibility to infection. M.MCK.

363—Arzneimittel-Forschung. Aulendorf.

- a. ERHARDT, A., 1956.—“Chemotherapeutische Untersuchungen an der Spulwurminfektion der Katze mit Piperazinhydrat.” 6 (8), 496–497. [English summary p. 497.]
b. JENTZSCH, K. & RONGE, H., 1956.—“Zur Bestimmung des biologischen Wirkungswertes von Wurmmitteln der Filix-Gruppe.” 6 (11), 639–647. [English summary p. 646.]

(363a) Erhardt reports that piperazine hydrate is a specific against *Toxocara cati* infection in cats. The therapeutic dose for a single oral application is 0.43 gm. per kg. body-weight, but a dose of 0.2 gm. per kg. led to vomiting in most animals. Piperazine failed in the treatment of *Ancylostoma caninum* and *Taenia taeniaeformis* in cats, and against *Trichinella* in rats. A.E.F.

(363b) Jentzsch & Ronge have found that hexylresorcinol is the most suitable agent for determining the relative effect of male fern extract, or the crude filicin prepared from it, on *Eisenia foetida*. A.E.F.

364—Atti della Accademia Nazionale dei Lincei. Rendiconti. Classe di Scienze Fisiche, Matematiche e Naturali. Rome.

- a. BIOCCA, E. & BENETTI, M. P., 1956.—“*Opisthorchis starkovi* n.sp. parassita di *Felis serval*.” Serie 8, 21 (6), 456–460.

(364a) *Opisthorchis starkovi* n.sp., found in two servals, *Felis serval*, captured in Somalia and kept at the zoo in Rome, is differentiated from *O. felineus* and *O. viverrini* by a combination of the following characters: the deeply lobed ovary, the presence of large and deep lobes on the testes, the size of these organs and their arrangement in a less oblique line than in

O. felineus, the position of the excretory vesicle under the testes, the length of the oesophagus which is not usually more than twice that of the pharynx, the size of suckers (acetabulum 0.14-0.27 mm. \times 0.17-0.29 mm. and oral sucker 0.13-0.26 mm. \times 0.20-0.33 mm.) and the smaller eggs (0.016-0.018 mm. [0.022 mm. in the differential diagnosis] \times 0.008-0.011 mm.). The bunches of transversely elongate vitelline follicles are closer together than in *O. viverrini*. About 9% of the stray cats in Rome are infected with *O. felineus*. M.MCK.

365—Atti della Società Italiana delle Scienze Veterinarie.

- a. MIOLI, M., 1956.—“Su di un caso di tetrathyridiosi in un francolino abissino.” 10, 353-357. [English & French summaries p. 357.]
- b. VITALE, G., 1956.—“Sulla frequenza della echinococcosi nei suini macellati in Messina.” 10, 397-399. [French & German summaries p. 399. Discussion p. 399.]
- c. ROMBOLI, B., BOTTI, L. & PIEROTTI, P., 1956.—“Contributo alla conoscenza della rottura delle cisti da echinococco nel fegato degli ovini: quadri anatomo-istopatologici.” 10, 400-403. [English & French summaries pp. 402-403.]
- d. ROMBOLI, B., BONO, G. DEL & PELLEGRINI, N., 1956.—“Contributo alla conoscenza della rottura delle cisti da echinococco nel polmone degli ovini: quadri anatomo-isto-patologici.” 10, 403-405. [English & French summaries p. 405. Discussion p. 405.]
- e. ROMBOLI, B., 1956.—“Rapporti tra echinococcosi uniloculare ed echinococcosi alveolare nell'ovino.” 10, 406-407. [English & French summaries p. 407. Discussion pp. 407-408.]
- f. CASAROSA, L., 1956.—“Contributo alla conoscenza della rottura della cisti di echinococco in fegato di bovino, e relativi quadri anatomo-isto-patologici.” 10, 408-410. [English & French summaries p. 410.]
- g. BONO, G. DEL & PELLEGRINI, S., 1956.—“Sulle alterazioni della bile colecistica di ovini colpiti da distomatosi epatica.” 10, 413-415. [English & French summaries pp. 414-415.]
- h. DEIANA, S., 1956.—“La coli-tifite parassitaria degli equini. Nota I: I parassiti dei generi *Strongylus*, *Poteriostomum* e *Triodontophorus*.” 10, 419-421. [English & French summaries pp. 420-421.]
- i. NARDI, E., 1956.—“Il tetracoloro di carbonio impiegato per via sottocutanea su ovini affetti da elmintiasi. Nota I.” 10, 424-428. [English & French summaries p. 428.]
- j. PUCCINI, V. & COLELLA, G., 1956.—“Indagine parassitologica sui cani di Foggia.” 10, 429-430. [English & French summaries p. 430.]
- k. PANEBIANCO, F., 1956.—“Il test di Thorn in cavie sperimentalmente infestate con uova embrionate di *Neoscaris vitulorum*.” 10, 517-518. [English & French summaries p. 518.]
- l. GENTILE, G., 1956.—“Anemia pseudo-aplastica in corso di anchilostomiasi canina.” 10, 528-532. [French & German summaries p. 532.]
- m. LORVIK, S. & MORICONI, A., 1956.—“Sulla natura della membrana elmintica delle cisti da echinococco.” 10, 556-559. [English & French summaries p. 559.]

(365a) About 50 *Tetrathyridium variabile*, larval forms of *Mesocestoides litteratus*, were found in a grouse (“francolino abissino”). The effect on the host tissue was slight. M.MCK.

(365b) The incidence of hydatid in the lungs, livers and other organs of 5,139 pigs, originating from Sicily and Calabria and slaughtered in the municipal abattoir of Messina, is tabulated for 13 monthly periods from 1954 to 1956. The over-all incidence was 8.75%. M.MCK.

(365c) The chief pathological changes caused by the rupture of hydatid cysts in the bile-ducts of sheep are inflammation and dilatation of the bile-ducts. Rupture of a cyst in the liver parenchyma produces haemorrhage and a clot usually forms in the opening of the ruptured cyst. If the rupture occurs in a blood vessel it results in the formation of a thrombus and atrophy of the myo-elastic structure as a result of compression of part of the cyst. M.MCK.

(365d) The first pathological effect of the rupture of a hydatid cyst in the lungs of sheep is the collapse of large portions of tissue. The bronchial tubes become filled with catarrhal exudate and desquamated epithelium, purulent cavities develop and the inflammatory process gradually diffuses into the collapsed tissue. M.MCK.

(365e) Romboli suggests that the rupture of a hydatid cyst in the bile-ducts of sheep tends to give rise to an infection of the alveolar type as a result of the attachment of the membrane in the small bile-ducts, the intense inflammation of the duct walls, the extensive necrosis

of the mucosa, the tendency of the membrane to invade the collateral network, and the histiocyte reaction on the walls of the ducts where portions of hydatid membrane tend to adhere. Rupture in the blood vessels or their walls can also lead to a secondary infection of the alveolar type.

M.MCK.

(365g) The bile of 20 sheep with mixed infections of *Dicrocoelium dendriticum* and *Fasciola hepatica*, when compared with that of 20 healthy sheep, showed a decrease in density from 1025 to 1021.6 and a reduction in the amount of dry residue of 24.4%, of salts 39.4% and of total pigment 49.1%. An increase in viscosity from 1.66 to 2.51 in the bile of the parasitized sheep was correlated with an increase in mucin from 0.157% to 0.322%.

M.MCK.

(365h) [A fuller account of this work appears in *Riv. Parassit.*, 1957, 18, 5-12. For abstract see Helm. Abs., 26, No. 37a.]

(365i) Injected subcutaneously a dose of 2 gm. of carbon tetrachloride in 5 c.c. of a mixture of one part of carbon tetrachloride and three parts of olive oil was too small to be effective against the strongyles and liver-fluke of sheep even when repeated after seven days.

M.MCK.

(365j) In 91 dogs caught in the town of Foggia, Italy, *Mesorchis* [in a table *Echinocasmus*] was found in 6 dogs, *Dipylidium caninum* in 32, *Mesocostoides lineatus* in 16, *Echinococcus granulosus* in 10, *Taenia coenurus* in 3, *T. hydatigena* in 5, *T. ovis* in 11, *T. pisiformis* in 13, hookworms in 49, *Spirocerca sanguinolenta* in 34 and *Toxocara canis* in 24.

M.MCK.

(365k) [A fuller account of this work appears in *Profilassi*, 1956, 29, 220-227. For abstract see No. 501c below.]

(365l) The blood of a dog suffering from heavy hookworm infection and intense anaemia was suggestive of aplastic myelosis but the marrow showed moderate hypoplasia of the granulocyte-producing cells and an excessive production of erythrocytes.

M.MCK.

(365m) The tests of Hotchkiss and Bauer indicated that the membrane of the hydatid cyst is composed of polysaccharides. These are probably neutral mucopolysaccharides as mucicarmine did not stain the tissue and there was metachromasia only in the range of pH 7 to pH 8.2. Even after treatment with saliva the positive Hotchkiss reaction excluded the presence of glycogen.

M.MCK.

366—Australian Veterinary Journal.

- SOMMERVILLE, R. I., 1956.—“The histology of the ovine abomasum, and the relation of the globule leucocyte to nematode infestations.” 32 (9), 237-240.
- GEMMELL, M. A., 1956.—“Hydatid disease. With special reference to *Echinococcus granulosus* (Batsch, 1786) (Rudolphi, 1805) in the dog.” 32 (9), 252-254. [Discussion pp. 254-255.]
- GORDON, H. McL., 1956.—“The influence of particle size on the anthelmintic efficiency of phenothiazine in sheep.” 32 (10), 258-268.
- BANKS, A. W., 1956.—“Internal parasites of sheep in South Australia—I. Studies in the Hills District, 1952-1955.” 32 (12), 313-320.

(366a) Although a positive correlation was observed between the presence or absence of globule leucocytes in the mucosa of the alimentary canal of sheep and the presence or absence of current and of long established nematode infection no evidence was obtained that these leucocytes were necessarily present in the same region as the nematodes.

R.T.L.

(366b) The incidence of *Echinococcus granulosus* in 481 rural dogs examined in 1955 in New South Wales was 26.6%. Twenty-one of these dogs were at rural abattoirs and eight of them were found to be infected. An analysis of the incidence of hydatid cysts in domesticated animals showed that up to 40% of all full-mouthed sheep on 60% to 70% of all properties in New South Wales were infected. The great majority of the cysts in cattle were sterile while those in sheep were usually fertile. The increase in the incidence of *E. granulosus* in rabbiting

dogs from 2.7% in 1926 to 19.1% in 1955 is attributable to the feeding of more sheep offal owing to the shortage of rabbits caused by myxomatosis. Hydatidosis in man in New South Wales is not a notifiable disease.

R.T.L.

(366c) The results of a series of tests on the relative efficacy of samples of phenothiazine of different particle sizes in the treatment of gastro-intestinal parasites of sheep are reported in detail and their effects on individual species are tabulated. *Oesophagostomum columbianum* appeared to be less affected than *Ostertagia* spp., *Trichostrongylus* spp. and *Haemonchus contortus*. The wide-spread use of commercial preparations containing a high proportion of coarse particles probably explains apparent failures of this chemical. No optimum particle size was discovered but the practice of using a double dose raised the amount of fine particles. In preparations of phenothiazine the size of particles should not exceed 30μ in diameter. Those containing a high proportion with less than 20μ in diameter are likely to be more dependable.

R.T.L.

(366d) Owing to a check in lamb growth at the time of the spring flush of feed, lamb production in the winter-rainfall Hills District of South Australia has not been satisfactory but it is shown that this check is not due to internal parasites. It is, therefore, recommended that no regular anthelmintic treatment should be given to lambs or to adult sheep unless when *Haemonchus* begins to cause trouble.

R.T.L.

367—Biológia. Bratislava.

- a. DYK, V., 1956.—“*Raphidascaris acus*, závažný parazit slovenských ryb.” 11 (2), 70–76. [German & Russian summaries p. 76.]
- b. KAŠTÁK, V., 1956.—“K nálezu *Dactylogyrus anchoratus* Dujardin, 1845 (Monogeneoidea) nového parazita ryb na Slovensku.” 11 (5), 299–300. [German & Russian summaries p. 300.]
- c. MACKO, J. K., 1956.—“K faune cestódov havranovitých východného Slovenska.” 11 (8), 457–465. [German & Russian summaries pp. 464–465.]
- d. KAŠTÁK, V., 1956.—“Nález trematóda z čelade Echinostomatidae, Dietz u hrebenačky obyčajnej (*Acerina cernua*).” 11 (8), 488–490. [German & Russian summaries p. 490.]
- e. MACKO, J. K., 1956.—“K faune trematódov lysky čiernej (*Fulica atra* L.).” 11 (9), 530–540. [German & Russian summaries p. 540.]
- f. KAŠTÁK, V., 1956.—“Predbežná zpráva o nálezech cudzopasčikov ryb v slovenských vodách.” 11 (10), 624–635. [German & Russian summaries p. 635.]
- g. BARUŠ, V. & TENORA, F., 1956.—“Příspěvek k poznání helmintofauny plchovitých (Myxoidae) v ČSR.” 11 (11), 651–661. [German & Russian summaries pp. 660–661.]
- h. BUŠA, V., 1956.—“Nový trematód *Philophthalmus* (*Tubolœcithalmus*) *hovorkai* n.sp. husi domácíj (*Anser anser domesticus*).” 11 (12), 751–754. [German & Russian summaries p. 754.]

(367b) The occurrence of *Dactylogyrus anchoratus*, on *Cyprinus carpio*, is reported from Slovakia for the first time.

R.T.L.

(367c) In eastern Slovakia, Macko has found and briefly describes and figures, *Anomotaenia constricta* and *Dilepis undula* in *Corvus frugilegus*, *Dicranotaenia serpentulus* in *Corvus corone cornix*, *Garrulus glandarius* and *Pica pica*, and *D. stylosa* in *G. glandarius* and *P. pica*. Some measurements are tabulated in comparison with those given by Joyeux & Baer.

R.T.L.

(367d) An unidentified species belonging to the family Echinostomatidae is briefly described and figured from the fish *Acerina cernua* caught in the River Čierna voda, Czechoslovakia.

R.T.L.

(367e) *Cyclocoelum* (C.) *microstomum*, *Echinostoma sarcinum*, *E. dietzi*, *Catantropis pacifera* and *Prosthogonimus ovatus* found by Macko in *Fulica atra* in Slovakia are redescribed and figured.

R.T.L.

(367f) The 31 species of Trematoda, six of Cestoda, eight of Nematoda and five of Acanthocephala collected from 21 species of fresh-water fishes in Slovakia are tabulated in a parasite-host list, with the localities where they were found. The parasites are also tabulated under their hosts. [*Dactylogyrus hovorkai* Kašták, 1955 and *D. petenyi* Kašták, 1955 are given in the table as new species.]

R.T.L.

(367g) In Slovakia 24 out of 27 *Eliomys quercinus* and eight out of 14 *Glis glis* were found infected with helminths. The six species found in these dormice are described and figured, viz., *Brachylaemus recurvus* (?), *Rictularia proni* Seurat, 1915, *sensu* Dollfus & Desportes, 1945, which is now reported from *E. quercinus* for the first time, *Capillaria myoxi-nitetae* and *Longistriata schulzi*, all of which are new to Czechoslovakia, and *Moniliformis moniliformis* and *Hymenolepis* sp. *C. myoxi-nitetae*, on the basis of material which includes males, is transferred to *Skrjabinocapillaria*. G.I.P.

(367h) *Philophthalmus* (*Tubolecithalmus*) *hovorkai* n.sp., from the eyes of seven out of 15 *Anser anser domesticus* in the neighbourhood of Jahodná, Slovakia, is nearest to *P. nyrocae*, but the cuticle in *P. hovorkai* is armed, the vitellaria begin at a level between the ventral sucker and the posterior edge of the cirrus pouch and finish before the first testis, the seminal vesicle occupies a smaller part of the pouch, the uterine loops reach to the middle of the first testis or further and the relative size of the suckers and of the gonads is different. G.I.P.

368—Biologia. Lahore.

- a. SARWAR, M. M., 1956.—“Studies on some trichostrongylids of ruminants from the Indo-Pakistan Sub-continent.” 2 (2), 145–215.

(368a) In this study of trichostrongylids, Sarwar has given particular attention to the organization of the ventral bursal rays and the cuticular markings of the lateral lobes. He proposes the following changes in the classification given by Skryabin *et al.* (1952). The Cooperinae now comprises only *Cooperia*, *Paracooperia* and *Cooperioides*. Most of the genera of the Longistronylea and Ostertagiae are placed, together with *Hyostongylus rubidus*, in a new subfamily Ostertagiinae characterized by ventral rays which are contiguous in their proximal portions diverging at their middle and converging in their distal thirds. The bursal cuticle has large plaques in the centre and longitudinal striations at the edge. *Rinadia* and *Pseudostertagia* are excluded as *Pseudostertagia* is closer to *Trichostrongylus* and *Rinadia* was evidently misinterpreted, the dorsal ray previously described being in fact the accessory bursal rays. Haemonchinae now contains *Haemonchus*, *Ashworthius* and *Leiperiatus* only, *Böhmiella* being closer to the Graphidiinae. The Ostertagiinae and Haemonchinae, distinguished by the large cervical papillae, by the bursal markings and the gradually tapering anterior end, are placed separately in Ostertagiidae n.fam. The species of *Ostertagia* are divided among five genera as follows: *Ostertagia* and *Stadelmannia* n.g. contain those species having a medium-sized dorsal lobe or dorsal ray. In *Ostertagia* the postero- and medio-lateral rays are close together and diverge from the antero-lateral, while in *Stadelmannia* the medio- and antero-lateral rays are close together and diverge from the postero-lateral. *Grosspiculagia* n.g. (which is raised from subgeneric rank) and *Sjobergia* n.g. have a long dorsal lobe and dorsal ray. In *Sjobergia* the externo-dorsal is the thickest of all the rays. In *Grosspiculagia*, which now contains fewer species, the externo-dorsal is the thinnest of the lateral rays. *Gruhnieria* n.g. has a much reduced dorsal lobe and no gubernaculum. The new combinations which are consequently proposed are: *Stadelmannia circumcincta*, *S. trifurcata*, *S. pinnata*, *S. turkestanica*, *S. harrisi*, *S. bakuriani* and *S. polarica*; *Grosspiculagia occidentalis*, *G. trifida* and *G. skrjabini*; *Sjobergia lyrata*, *S. nemorhaedi*, *S. kolchida* and *S. arctica* and *Gruhnieria grühneri*. *Gruhnieria bubalis* n.sp., found in a buffalo calf in the Jammu hills, outer Himalayas, differs from *G. grühneri* in the size of the dorsal ray [illustrated but not measured] and in that the spicules, which are 0.15–0.175 mm. long, divide 0.05 mm. from the distal end into an outer, and two inner, processes. The species of *Trichostrongylus* are now put into five genera. *Trichostrongylus* retains the species in which the postero lateral ray is thinner than the remaining laterals and diverges from them to lie close to the externo-dorsal ray. *Cobboldstrongylus* n.g. has medio- and postero-laterals of equal size, their tips are closer than those of any other rays and the ventro-ventral ray has a typical spiral twist. The externo-dorsal and postero-lateral rays of *Gilesia* n.g. are close together at their tips and the tip of the postero-lateral is bent. The dorsal ray has on each of its branches an outer process and, further back, a papilla-like

inner process. In *Probostrongylus* n.g. the externo-dorsal ray is remarkably short, straight and slender, lying parallel to the dorsal ray. *Buckleya* n.g. is characterized by the proximity of the ventro-ventral and ventro-lateral rays; the ventro-ventral ray is comparatively large and the vulva is oblique. The resulting new combinations are: *Cobboldostrongylus axei* and *C. minor*; *Gilesia colubriiformis*, *G. longispicularis* and *G. pietersei*; *Probostrongylus probolurus* and *P. hamatus*; *Buckleya vitrinus* and *B. leiperi*. A single male of *Gilesia ovis* n.sp., found in a sheep at Chiniot, West Pakistan, differs from that of *G. colubriiformis* in the shape and size of spicules. These measure 0.12 mm. and 0.14 mm. and have barbs at 0.034 mm. from the distal end which are not equally prominent in both spicules. Sarwar gives numerous diagrams of the bursal rays and spicules of different species and summarizes the geographical distribution of *Ostertagia*, sensu lato, in West Pakistan and of *Trichostrongylus*, sensu lato, in Indo-Pakistan. The species of *Ostertagia*, sensu lato, recorded for the first time in Indo-Pakistan, are *O. muraschkinzevi*, perhaps the commonest helminth of sheep and goats in the Himalayas, *O. nemorhaedi*, *O. mossi*, *O. lyrata* and *O. occidentalis*; and of *Trichostrongylus*, sensu lato, *T. vitrinus* and *T. longispicularis*.

M.MCK.

369—Biological Bulletin.

- a. STUNKARD, H. W., 1956.—"The morphology and life-history of the digenetic trematode, *Azygia sebago* Ward, 1910." 111 (2), 248-268.
- †b. STUNKARD, H. W., 1956.—"Studies on parasites of the green crab, *Carcinides maenas*." 111 (2), 295.
- †c. READ, C. P., 1956.—"Carbohydrates metabolized by cestode parasites of dogfish." 111 (2), 311.
- †d. WILLEY, C. H., 1956.—"A rapid method for recognition of specimens of *Littorina littorea* infected with trematode larvae." 111 (2), 316-317.

(369a) Stunkard prefaces his account of *Azygia sebago* with a review of the genus. He considers the discrepancies between the observations of many workers and discusses the divergent opinions held on the validity of various species. From the literature and his own observations he concludes that *A. lucii* does occur in North America and that it is probably distinct from *A. longa*, that *A. angusticauda* is valid and that the original description of *A. sebago* was based on representatives of two species. *A. acuminata*, *A. bulbosa*, *Hassallius hassalli* and *A. sebago* may all be identical. The adult, miracidium, sporocyst, first generation redia and cercaria of *A. sebago* are described and figured. The miracidia emerge only when the eggs are ingested by the snail intermediary, *Amnicola limosa*; rediae develop in the sporocysts but Stunkard was not able to determine if a second generation of rediae was produced; the cercariae are large and develop slowly within the redia. In nature, small fish can acquire the infection by eating the cercariae but it seems more probable that the eels do so by ingesting the paratenic hosts, *Dugesia tigrinum*, in which the young trematodes can live for weeks in the pharyngeal pouches.

S.W.

(369b) Stunkard has investigated an encysted metacercaria, commonly parasitic in *Carcinides maenas* in the Woods Hole area, as a possible means of biological control of these crabs which are serious predators of *Mya arenaria*. *Sterna hirundo* and *Larus argentatus* were infected experimentally and the adult worms recovered appeared to be identical with *Microphallus similis*. The structure of the metacercariae suggested that they developed from minute stylet-bearing cercariae, probably *Cercaria ubiquita*, occurring in *Littorina obtusata*, *L. saxatilis* and occasionally in *L. littorea*. Small crabs exposed continuously with six to eight infected periwinkles died in 10 to 20 days.

S.W.

(369c) [A fuller account of this paper appears in *Exp. Parasit.*, 1957, 6, 288-293. For abstract see *Helm. Abs.*, 26, No. 95f.]

(369d) [A fuller account of this paper appears in *J. Parasit.*, 1957, 43, 324-327. For abstract see *Helm. Abs.*, 26, No. 112y.]

†Abstract of paper presented at the Marine Biological Laboratory General Scientific Meetings, August 20-22, 1956.

370—Biological Studies. Catholic University of America.

- a. CUNNINGHAM, F. C., 1956.—“A comparative study of tropisms exhibited by different stages of *Nippostrongylus muris* (Nematoda: Trichostrongylidae).” No. 36, 24 pp.

(370a) The various tropisms shown by the preparasitic stages in the life-cycle of *Nippostrongylus muris* differed from those of the parasitic stages. The preparasitic stages were in general positively phototropic to electric light and negatively chemotropic with regard to rat serum while the parasitic stages had the opposite reactions. Thermotropism was present at all stages and increased gradually with age. The second, infective and early lung stages showed a strong positive thigmotropism and 74% of the second-stage larvae were able to penetrate skin. Negative geotropism in the preparasitic forms was replaced by a positive geotropism in the parasitic phases. M.MCK.

371—Boletim Fitossanitário. Rio de Janeiro.

- a. FRANCO, E., 1956.—“Métodos de laboratório em nematologia.” 6 (3/4), 127-142.

(371a) Franco concludes his illustrated account of the various laboratory techniques used in the Divisions of Nematology and Plant Industry Station, Beltsville, U.S.A. R.T.L.

372—Boletim de Indústria Animal. São Paulo.

- a. GOUVEIA, P. F. & RABELLO, E. X., 1956.—“Observações sobre a parascaridiose equina. Nota preliminar sobre o tratamento pelo adipato de piperazina.” 15 (1), 47-52. [English summary p. 52.]

(372a) After 15 horses had received piperazine adipate mixed with their rations, the faeces became negative for *Parascaris equorum* eggs. Nine were given 20 gm. each on four consecutive days (three of these horses required a second treatment), three received 28 gm. on three consecutive days and three were given 80 gm. as a single dose. M.MCK.

373—Boletín de la Asociación Médica de Puerto Rico.

- a. PASSALACQUA, L. A., RODRÍGUEZ-MOLINA, R. & OTERO, P. J., 1956.—“*Schistosoma mansoni* granuloma with abscess formation, paracolic, adherent to the ascending colon and anterior abdominal wall. Report of a case.” 48 (8), 325-334.
b. RODRÍGUEZ-MOLINA, R., OLIVER-GONZÁLEZ, J. & SERRANO, D. G., 1956.—“Studies on immunity to schistosomiasis mansoni: evaluation of the circumoval precipitin tests as a diagnostic procedure in clinical schistosomiasis mansoni. Report of 46 cases.” 48 (10), 389-392.
c. RODRÍGUEZ, H. F., 1956.—“Schistosomal hepatosplenomegaly.” 48 (10), 393-403.
d. MARTÍNEZ-RIVERA, E. & KOPPISCH, E., 1956.—“Las manifestaciones pulmonares de la esquistosomiasis de Manson en Puerto Rico.” 48 (10), 404-422.

(373b) The authors describe a technique for performing circumoval precipitin tests for the diagnosis of schistosomiasis. The reaction was positive in 43 out of 46 proved cases of schistosomiasis mansoni. S.W.

374—Boletín Chileno de Parasitología.

- a. NEGhme, A., SILVA, R. & SILVA, Y., 1956.—“Algunos aspectos epidemiológicos sobre hidatidosis humana en Chile—años 1953 y 1954.” 11 (3), 42-46. [English summary p. 42.]
b. AGOSIN, M., 1956.—“Studies on the cytochrome system of *Trichinella spiralis*.” 11 (3), 46-51. [Spanish summary p. 46.]
c. FAIGUENBAUM, J., GONZÁLEZ, G., PEÑA, J. & MAFFIOLETTI, F., 1956.—“Tratamiento de la oxyuriasis con dietilendiamina (piperazina).” 11 (3), 51-54. [English summary p. 51.]
d. SCHENONE, H., ROBLES, E. & MONTOYA, C., 1956.—“Dos casos de erupción reptante.” 11 (4), 71-73. [English summary p. 71.]

(374a) Records of 1,093 new hydatid cases in Santiago were found among statistics for 1953 and 1954 from private clinics, national hospitals, hospitals of other institutions and 6,027 autopsies. Most of the infected persons came from the middle and south of Chile. This agrees with the distribution of hydatid in farm stock. M.MCK.

(374b) Agosin has demonstrated in homogenates or cell fractions (or both) of *Trichinella spiralis* larvae the activity of cytochrome-c, cytochrome oxidase, succinoxidase and succinic dehydrogenase by manometric methods and, in the case of cytochrome oxidase, also by spectrophotometric methods. His findings indicate the existence of a cytochrome-cytochrome oxidase system. Most of the enzyme activity of cytochrome oxidase, succinoxidase and succinic dehydrogenase was particle-bound, mitochondria being the main point of enzyme concentration. In whole larval homogenates, the method of Potter & Dubois demonstrated an average of 2.73 μ gm. of cytochrome-c per mg. of total nitrogen. M.MCK.

(374c) For the treatment of enterobiasis piperazine hexahydrate was given for two periods of seven days, separated by a week's rest, at a daily rate of more than 50 mg. per kg. body-weight to 44 people, and of less than 50 mg. per kg. to 66 people. Thirty-four and 46 were cured respectively. M.MCK.

(374d) Creeping eruption in two children, two years of age, in Santiago was cured by the application of ethyl chloride. In the household of one of the children three dogs were infected with *Ancylostoma caninum*. M.MCK.

375—Boletín de Laboratorio Clínico. Caracas.

- a. DÍAZ UNGRÍA, C., 1956.—“I.—Algunas cuestiones de nomenclatura sobre cestodes venezolanos.” 1 (1), 41-43.

(375a) Díaz Ungría cites the records of *Hymenolepis nana*, *Raillietina demerariensis*, *Inermicapsifer cubensis*, *Spirometra decipiens* and *S. reptans* in Venezuela with the author and date and suggests the adoption by text-books of López-Neyra's nomenclature for the first three species, viz., *Dicranotaenia* (*Dicranotaenia*) *nana*, *Inermicapsifer* (*Raillietina*) *demerariensis* and *I. (R.) madagascariensis*. M.MCK.

376—Boletín de la Oficina Sanitaria Panamericana.

- a. FERGUSON, F. F. & GERHARDT, C. E., 1956.—“Sexual apparatus of selected planorbid snails of the Caribbean area of interest in schistosomiasis control.” 41 (4), 336-345. [Spanish summary p. 345.]

377—Boletín Trimestral de Experimentación Agropecuaria. Lima.

- a. QUEVEDO DÍAZ, A., SIMÓN, J. E. & TOXOPEUS, H. J., 1956.—“Estudios de resistencia a la ‘anguilula dorada’ (*Heterodera rostochiensis*).” 5 (1), 18-24.
b. BAZÁN DE SEGURA, C., 1956.—“Creciente importancia de los nemátodos en el cultivo del algodón en el Perú.” 5 (2), 12-14.

(377a) [This paper is also published in *Inf. Estac. agric. La Molina*, 1956, 30 (347), 10-15. For abstract see No. 426b below.]

(377b) Symptoms of poor growth of cotton in certain areas are considered to be due to attacks on the roots by nematodes and fungi combined with unfavourable growing conditions. The nematodes concerned are not named: the fungi are *Thielaviopsis basicola* and *Verticillium albo atrum*. M.T.F.

378—Bollettino della Società Italiana di Biologia Sperimentale.

- a. LAI, M., 1956.—“*Ostertagia arctica* (Mitzkewitsch, 1929) repertata in bovini e caprini della Sardegna.” 32 (12), 1586-1588.

(378a) *Ostertagia arctica*, known hitherto only from the reindeer, *Rangifer tarandus*, is added to the gastro-intestinal strongyles of cattle and goats in Sardinia, previously listed by Lai [for abstracts see *Helm. Abs.*, 24, No. 628d, 25, Nos. 77a, 290b and No. 501b below.] He considers that *O. arctica* belongs to the subgenus *Grossspiculagia* Orloff, 1933 and not to the subgenus *Ostertagia* Orloff, 1933. M.MCK.

379—Bragantia. Campinas.

- a. LORDELLO, L. G. E., 1956.—“Nematóides que parasitam a soja na região de Bauru.” 15, 55–64. [English summary pp. 63–64.]
- b. LORDELLO, L. G. E. & ARRUDA, H. V. DE, 1956.—“Nematóides parasitando guandu.” 15, v–vii. [English summary pp. vi–vii.]

(379a) Three nematodes have been found damaging soya beans in the State of São Paulo, Brazil, namely *Pratylenchus* sp., *Meloidogyne incognita* and *M. javanica bauruensis* n.subsp. The new subspecies is described and figured. It differs from *M. javanica* in having broader eggs, a slightly longer stylet and a longer oesophagus in proportion to the total length in the larva, a single post-labial annule in the male and differences in the perineal pattern which has a high arch with wavy to zigzag striae and the lateral lines less well marked than in *M. javanica*. Male intersexes occurred having female characters in more or less marked degree. Measurements are given of the population of *M. incognita* which differ from that described by Chitwood in having shorter and more slender larvae and shorter spicules. This species attacked only the soya bean variety La41-1219 and *M. javanica bauruensis* only the variety Abura. M.T.F.

(379b) Pigeon pea (*Cajanus cajan*) was severely damaged by *Xiphinema campinense* and *Meloidogyne javanica bauruensis* when grown for two years in an experiment in the State of São Paulo, Brazil. An outstanding character of *X. campinense* is the strong development of the stylet muscles which sometimes obscure the stylet. *M. javanica bauruensis* produces small galls on this host and the females may be seen on the root surface. M.T.F.

380—British Journal of Pharmacology and Chemotherapy.

- a. CALDWELL, A. G. & STANDEN, O. D., 1956.—“The activity of *p*-aminophenoxyalkane derivatives against *Schistosoma mansoni*.” 11 (4), 367–374.
- b. STANDEN, O. D. & WALLS, L. P., 1956.—“Effect of ring-substituents on the activity of diphenoxyalkanes against *Schistosoma mansoni*.” 11 (4), 375–378.

(380a) The compounds studied were of four types: (i) di-(*p*-aminophenoxy)alkane derivatives with the amino groups differently substituted, (ii) *p*-aminodiphenoxyalkane derivatives, (iii) *p*-aminophenoxyalkoxyalkanes and (iv) miscellaneous inactive compounds related to types (i), (ii) and (iii). The limits of activity against *Schistosoma mansoni* in white mice are expressed as worm kill and given in a series of tables. The authors define, as far as is possible on present knowledge, the minimum structural features necessary for activity in this series and discuss the relationship between structure and activity. S.W.

(380b) Standen & Walls studied the effect of substitution of methyl, methoxyl and other groups in the benzene rings of diphenoxyalkanes on their activity against *Schistosoma mansoni* in white mice. In most cases this resulted in either complete loss of activity or very great reduction, especially in compounds in which both rings were substituted. A nitro-amine substituted with methyl in the basic ring showed a high activity. S.W.

381—British Veterinary Journal.

- a. CHANDLER, R. L., 1956.—“An occurrence of toxicity associated with phenothiazine in West African cattle.” 112 (9), 387–388.

(381a) Fatal phenothiazine toxicity with symptoms of conjunctivitis, keratitis, weakness, inappetence and, in one case, photophobia occurred in one herd of Zebu cattle in the Zaria Province of Northern Nigeria during the month of September although different groups of cattle which had been dosed in the previous four months showed no symptoms. It is suggested that the toxicity might have been connected in some manner with the lush and abundant herbage eaten during the rainy season in September. R.T.L.

382—Bulletin de l'Académie Vétérinaire de France.

- a. LOGÉ, G., LOGÉ, P. & HUET, P., 1956.—“Observation d'un cas atypique de diotrophymose chez une chienne.” 29, 249-250.

(382a) A female *Dioctophyme renale* was evacuated from a swelling on the abdomen of a boxer dog, seven years of age, which had been kept at Pommeraye-en-Donges near Saint-Nazaire since it was two months old.

R.T.L.

383—Bulletin of the Calcutta School of Tropical Medicine.

- a. CHOWDHURY, A. B., DASGUPTA, B., RAY, H. N. & BHADURI, N. V., 1956.—“Histochemical pattern of the microfilaria of *Wuchereria bancrofti* in peripheral blood.” 4 (1), 23-24.
- b. SEN, H. G., SINHA, P. K., CHOWDHURY, A. B. & RAY, H. N., 1956.—“On the microfilaria of *Stephanofilaria assamensis*, the causal organism of ‘hump sore’ in cattle. A preliminary note.” 4 (1), 24-25.
- c. CHOWDHURY, A. B., DASGUPTA, B., RAY, H. N. & BHADURI, N. V., 1956.—“Observations on the mesenchyme of *Taenia saginata*.” 4 (1), 25.
- d. CHOWDHURY, A. B., DASGUPTA, B., RAY, H. N. & BHADURI, N. V., 1956.—“Observations on the chorionic membrane in *Taenia saginata*.” 4 (1), 26.
- e. BHADURI, N. V. & CHOWDHURY, A. B., 1956.—“Piperazine adipate in the treatment of enterobiasis.” 4 (1), 30.
- f. BHADURI, N. V. & CHOWDHURY, A. B., 1956.—“Ascariasis in children treated with piperazine hydrate.” 4 (1), 30.
- g. HAWKING, F., 1956.—“Filariasis.” 4 (1), 33-38.
- h. BHADURI, N. V. & CHOWDHURY, A. B., 1956.—“Observations on the morphology of the circulating microfilariae of *Wuchereria bancrofti* and *W. malayi*.” 4 (2), 74.
- i. CHOWDHURY, A. B., DASGUPTA, B., RAY, H. N. & BHADURI, N. V., 1956.—“Polysaccharides in the developing embryo of *Wuchereria bancrofti*.” 4 (2), 74-75.
- j. CHOWDHURY, A. B., DASGUPTA, B., RAY, H. N. & BHADURI, N. V., 1956.—“A histochemical study of the hookworm larva.” 4 (2), 75.
- k. BHADURI, N. V., CHOWDHURY, A. B. & ARORA, U. S., 1956.—“Study on the anthelmintic action of preparation No. 14914E against *Ascaris lumbricoides*.” 4 (2), 81.

(383a) Hotchkiss' PAS-reaction revealed the distribution of polysaccharides in the microfilaria of *Wuchereria bancrofti*. The sheath was permeable to supravital staining. Food material is probably transported to the embryo by endosmosis, while the abundance of mucopolysaccharide in the embryo helps to promote osmosis between the host and parasite. R.T.L.

(383b) The microfilaria of *Stephanofilaria assamensis* in cattle is now described for the first time from material obtained from hump sores in Bengal. Its microfilaria, unlike those of *S. desdesi* and *S. kaili*, is without a sheath and measures 60μ to $100\mu \times 4\mu$ to 10μ . The anterior end is knob-like and the tail tapers gradually. From the anterior end the relative distances are: nerve ring 24%, excretory pore 47%, genital cell 59% and anal pore 82%. R.T.L.

(383c) Histochemical study of the mesenchyme of *Taenia saginata* revealed that the cell nuclei contain a fair amount of Feulgen-positive material, the cytoplasm was pyroninophilic and gave an intensely positive reaction for glycogen. Hyaluronic acid type of polysaccharide was pronounced over the nuclear sites. Alkaline phosphatase activity was conspicuous over the nuclei but only faintly shown by the cytoplasm. The cytochemical pattern of the different components of the subcuticular cells was similar to that of the mesenchymal cells. That cestodes utilize glucose is confirmed by the abundance of glycogen in the mesenchymal area; the excess of carbohydrate is stored there as glycogen. R.T.L.

(383d) In *Taenia saginata* the chorionic membrane which encloses the yolk material around the hexacanth embryo is nucleated. Usually there are two nuclei. Simple proteins are present in the membrane in liberal amount. The cytoplasm of its cells is loaded with PAS-positive granules which are conspicuously pyroninophilic. R.T.L.

(383e) The faeces and anal swabs were negative in 14 out of 21 enterobiasis patients who, one month previously, had received a course of Entacyl tablets at the rate of 150 mg. to 600 mg. twice daily for seven consecutive days. R.T.L.

(383f) Nine out of 35 children were cured of *Ascaris* infection after receiving Antepar tablets, each containing 500 mg. of piperazine hydrate; the dosage rate was 50 mg. per kg. body-weight daily, in divided doses after food, for four consecutive days. R.T.L.

(383g) In this lecture Hawking considered the causation of microfilarial periodicity and the use of hetrazan as a means of eradicating filariasis by mass treatment. R.T.L.

(383h) A number of microfilariae in thick films from peripheral blood of patients differed from the classical descriptions of *Microfilaria bancrofti* and *Mf. malayi*. Many *Mf. bancrofti* showed sharp rigid bends. Of the *Mf. malayi* some had no stiff kinks and many approximated *Mf. bancrofti* in body length and thickness and in the vertical diameter of the cephalic space. Nevertheless the presence of terminal nuclei in the tip of the tail of *Mf. malayi* and their absence in that of *Mf. bancrofti* was almost invariably diagnostic. Whereas there was almost always a conspicuously clear space between the column of somatic nuclei and the body wall in *Mf. bancrofti*, this was absent in *Mf. malayi*. R.T.L.

(383i) Histochemical studies on the evolution of polysaccharides during the different stages of development of *Wuchereria bancrofti* in *Culex fatigans*, show that these are distributed throughout the larvae in conformity with the development of the alimentary canal and not confined to the Fülleborn's inner body as in the microfilaria. The parenchymal zone is also heavily impregnated with compact aggregates of polysaccharides. The amount of mucopolysaccharide increased with successive stages of development and became copious in the infective larvae. Perhaps this polysaccharide complex is responsible for the parasite's subsequent immunogenic characters in the definitive host. R.T.L.

(383j) Histochemical investigation made on larvae of *Necator americanus* and *Ancylostoma duodenale*, from cultures eight to ten days old, showed that the muscle layer contained large aggregates of PAS-positive material. The reaction in the cytoplasmic areas of the gut and lateral and median bands was intense. The body-wall and the site of the genital primordium were negative. Strong violet metachromasia indicating abundance of mucopolysaccharides was revealed all over the body by toluidine blue. Alkaline phosphatase activity was concentrated over the nuclear sites and along the transverse striations of the body-wall. R.T.L.

(383k) Two were cured out of 15 adults with *Ascaris* infection who were followed up after receiving a thiocarbanilate compound (No. 14914E) in tablet form, containing 125 mg. each, thrice daily for two days. None of the nine children treated with half a tablet thrice daily for three days and followed up, were cured but one passed 90 worms. R.T.L.

384—Bulletin of the California Department of Agriculture.

- a. HART, W. H., 1956.—“Spreading decline of citrus caused by the burrowing nematode.” 45 (4), 263–267.

(384a) This general account describes the symptoms, host range, the eelworm, geographical distribution, history in Florida and control of *Radopholus similis*, culled from a variety of quoted papers. A survey carried out in California failed to find *R. similis* on citrus or avocado but found it on *Musa*, *Philodendron*, *Anthurium*, *Pothos*, *Strelitzia*, *Heliconia*, *Cyperus* and *Zingiber*. J.B.G.

385—Bulletin de l'Institut Français d'Afrique Noire. Série A. Sciences Naturelles.

- a. GOLVAN, Y., 1956.—“Le genre *Centrorhynchus* Lühe 1911 (Acanthocephala-Polymorphidae). Révision des espèces européennes et description d'une nouvelle espèce africaine parasite de rapace diurne.” 18 (3), 732–785.
- b. DOLLFUS, R. P. & GOLVAN, Y. J., 1956.—“Mission M. Blanc—F. d'Aubenton (1954). V. Acanthocéphales de poissons du Niger.” 18 (4), 1086–1109.

(385a) The 53 species of *Centrorhynchus* here annotated and listed under their hosts comprise almost a tenth of the known species of Acanthocephala. The genus, of which *Gordiorhynchus* Meyer, 1931 is considered a synonym, is now subdivided into two. (i) *Sphaerirostris* n.subg. is characterized by a reduced and spindle-shaped body, a short proboscis with an almost spherical anterior portion and testes which are almost spherical and often bulky.

Its twelve species are always found in Corvidae and Turdidae or allied families but never in birds of prey. The European and Mid-Asian species have three cement glands while those of the Far East usually have four. (ii) *Longirostris* n.subg. is distinguished by a large elongated body, of which the anterior portion is usually slightly swollen, and a somewhat long proboscis with a median swelling. The testes are always longer than broad and are placed in the dilated anterior portion of the body. The long tubular cement glands usually number three but four may be present in Far Eastern and Neartic species. All its 41 species are parasites of diurnal or nocturnal birds of prey. *C. (L.) galliardi* n.sp. from a bird of prey which may have been a species either of *Milvus* or *Accipiter*, at Marrakesh (Morocco), is based on the shape and the reduced number (about 20) of longitudinal rows of hooks on the proboscis. In these respects it approaches the South American *C. (L.) albidus*. Its juveniles were found encysted in the body-cavity of *Coelopeltis monspessulana insignitus* in the neighbourhood of Marrakesh. *C. (L.) indicus* nom.nov. is proposed for *Centrorhynchus falconis* Das, 1949, which is pre-occupied by *Gordiorhynchus falconis* Johnston & Best, 1943. *Echinorhynchus merulae* Gmelin, 1790 p.p., *E. cinctus* Rudolphi, 1819 p.p., *Centrorhynchus embae* Kholodkovski & Kostilev, 1916, and *C. scanensis* Lundström, 1942 are considered to be synonyms of *Centrorhynchus (S.) lancea* (Westrumb, 1821). *E. lobianchii* Monticelli, 1887 and *C. picae* Dollfus, 1953 are synonyms of *C. (S.) teres* (Westrumb, 1821). *C. leguminosus* Solovev, 1912, *C. bipartitus* Solovev, 1912, *C. corvi* Fukui, 1929 and *C. skrjabini* Petrochenko, 1949 are synonyms of *C. (S.) pinguis* Van Cleave, 1918. *C. globocaudatus* (Zeder, 1800), *C. olssoni* Lundström, 1942, *E. appendiculatus* Westrumb, 1821 and *E. soricis* Rudolphi, 1819 are synonyms of *C. (L.) aluconis* (Müller, 1780). *C. tenuicaudatus* (Marotel, 1899) is a synonym of *C. (L.) buteonis* (Schränk, 1788) and *C. dimorphocephalus* (Westrumb, 1821) is a synonym of *C. cylindraceus* (Schränk, 1788) which is transferred to the genus *Prosthorhynchus*. [Certain emendations in nomenclature were published by the author in 1957 in *Bull. Inst. franç. Afr. noire, Série A*, 19, 412-416. For abstract see *Helm. Abs.*, 26, No. 77a.] R.T.L.

(385b) *Temuisentis niloticus* was collected from the fish *Heterotis niloticus* and its juveniles were found encysted in the body-cavity of *Hydrocyon brevis*. *Hexaspiron nigericum* n.g., n.sp., from a silurid fish *Synodontis membranaceus* in the French Sudan, has four hooks arranged on each of six spirals on the rostellum. This new genus is placed in Neoechinorhynchidae for which a key is given to the ten genera. It is remarked that as nine of these contain only a single species each, the classification of the Neocanthocephala calls for revision. *Acanthogyrus nigeriensis* n.sp. from *Labeo koubie* at Diarafabé in French Sudan is described and figured. It is shown that *Acanthosentis* is a synonym of *Acanthogyrus* and all its species are transferred to *Acanthogyrus*. The family Acanthogyridae disappears and *Acanthogyrus* replaces *Acanthosentis* in the family Pallisentidae. R.T.L.

386—Bulletin of the Institute of Public Health, Tokyo.

- a. YOKOGAWA, M., OSHIMA, T., SANO, M., KIHATA, M., SATO, S. & KOMIYA, Y., 1956.—“Experiments in the mass treatment of hookworm and ascariasis. Expulsion of young *Ascaris* worms.” 5 (2), 2-6.

(386a) During a mass treatment campaign in Takasaka village, Saitama Prefecture, Japan, examination of the *Ascaris lumbricoides* collected from the faeces eight hours to eight days after anthelmintic treatment showed that young worms of less than 3 cm. in length were less resistant than the larger worms and were usually discharged much earlier. M.MCK.

387—Bulletin of the National Institute of Agricultural Sciences, Tokyo. Series C. Plant Pathology and Entomology.

- a. GOTO, K. & FUKATSU, R., 1956.—[Studies on the white tip of rice plant. III. Analysis of varietal resistance and its nature.] No. 6, pp. 123-149. [In Japanese: English summary pp. 147-149.]

(387a) Twenty varieties of rice were compared, in field tests, for their resistance to white tip disease [due to *Aphelenchoides besseyi*] by top dressing the germinating seedlings with hulls

from diseased plants and comparing the percentage of culms which developed white tip symptoms. The variety Tosan 38 showed no symptoms in three years' testing and only light symptoms were shown by Norin 8 (three years), Norin-mochi 5 (two years) and Hatsushimo (two years). Asahi 1, Aichi-Asahi and Kinai-Omachi 2 were very susceptible. Laboratory experiments carried out in a specially designed petri dish showed variations in the attractiveness of seedlings of different varieties to the nematodes, the variations being strongly correlated with susceptibility in the field. The nematodes were attracted to young growing parts of rice plants, to expressed juice, aqueous extract of germinating rice seed and to the distillate and remainder of these fluids but not to ungerminated seed, hulls or other old plant parts. The reaction is chemotactic. Seedlings of barley, wheat and oats also have a positive attraction. In experiments, the rate of multiplication of nematodes was less in resistant than in susceptible varieties and less in seedlings before than after tillering and became rapid after the boot stage. The nematodes were larger in susceptible than in resistant varieties. Tolerant varieties of rice show few white tip symptoms but nematodes may occur in the panicles: these varieties may act as nematode carriers.

M.T.F.

388—Bulletin de la Société de Pathologie Exotique.

- a. FRAGA DE AZEVEDO, J. & MEDEIROS, L. DE, 1956.—“Contribution à l'étude comparative de *Biomphalaria adowensis* Bourg. (Bailundo, Angola) et de *Biomphalaria pfeifferi* (Krauss) (Sud du Save, Mozambique), par l'anatomie des organes génitaux, considérant les deux espèces du point de vue des caractères conchyliologiques.” 49 (5), 815-823.
- b. FRAGA DE AZEVEDO, J., CARVAO GOMES, F., BAPTISTA, A. M. & MAGALHAES, E. M. DE, 1956.—“Étude du métabolisme chez les mollusques d'eau douce. Métabolisme du phosphore, étudié avec emploi du ^{32}P .” 49 (5), 912-917.
- c. FRAGA DE AZEVEDO, J. & CARVAO GOMES, F., 1956.—“L'action biologique de la radiation gamma sur des mollusques d'eau douce.” 49 (5), 917-921.
- d. DESCHIENS, R., LAMY, H. & MOLINARI, V., 1956.—“Intérêt pratique de la présence intra-hépatique des oeufs de *Schistosoma mansoni* embryonnés dans la bilharziose expérimentale du hamster.” 49 (6), 1109-1110.
- e. DESCHIENS, R. & MOLINARI, V., 1956.—“Sur l'action molluscicide de l'oxyde de zinc et de l'aldéhyde méthylque.” 49 (6), 1111-1113.
- f. THOORIS, G. C., HEULS, J., KESSEL, J. F., L'HOIRY & BAMBRIDGE, B., 1956.—“Étude sur les méthodes de diagnostic et de traitement de la filariose à *Wuchereria bancrofti* en Océanie française.” 49 (6), 1138-1157.
- g. LAVIER, G., 1956.—“Le rôle pathogène des schistosomes.” 49 (6), 1158-1166. [Discussion p. 1167.]
- h. BERDONNEAU, R. & GARCIN, D., 1956.—“A propos d'un cas de bilharziose pulmonaire à *Schistosoma mansoni*.” 49 (6), 1167-1171. [Discussion pp. 1171-1172.]
- i. GASCHEN, H., MATTHEY, G. & JOMINI, P., 1956.—“Un cas de dermatite des nageurs sur les rives du Lac Léman.” 49 (6), 1172-1177. [Discussion p. 1177.]
- j. SCHWETZ, J., 1956.—“Démonstration sur une collection de mollusques, variés, africains, lacustres et fluviaux, hôtes intermédiaires de schistosomes humains et animaux. Présentation de la collection.” 49 (6), 1178-1194.
- k. FRAGA DE AZEVEDO, J., 1956.—“Présentation d'une clef de classification des gastropodes pulmonés du Sud du Save (Mozambique).” 49 (6), 1194-1196.
- l. BUTTNER, A., 1956.—“Quelques données pratiques et observations sur le cycle évolutif expérimental de *Schistosoma mansoni* (Trématode, Plathelminthe).” 49 (6), 1197-1211.
- m. WRIGHT, C. A., 1956.—“Some factors affecting the susceptibility of snails to infection with miracidia of *Schistosoma* spp.” 49 (6), 1211-1220. [French summary p. 1218.]
- n. SCHNEIDER, J., 1956.—“Revue critique de la thérapeutique des bilharzioses.” 49 (6), 1220-1247.
- o. FRIEDHEIM, E. A. H., 1956.—“Le traitement de la bilharziose urinaire à *S. haematobium* par le dimercaptosuccinate d'antimoine (TWSb).” 49 (6), 1247-1252.
- p. MORIN, H. G. S., 1956.—“A propos de la prévention des bilharzioses.” 49 (6), 1252-1253.
- q. VERMEIL, C., 1956.—“L'orientation des recherches sur les actions molluscocides dans le cadre de la lutte contre les bilharzioses.” 49 (6), 1254-1264.
- r. DESCHIENS, R., 1956.—“Les actions molluscocides dans le cadre de la prophylaxie des bilharzioses.” 49 (6), 1264-1284.

(388a) From a detailed investigation of the genitalia of *Biomphalaria adowensis*, collected at Bailundo in Angola, and of *B. pfeifferi*, collected in Sul do Save in Mozambique, Fraga de Azevedo & Medeiros conclude that the two species are quite distinct.

S.W.

(388b) Using sodium orthophosphate labelled with P^{32} the authors have studied the uptake of phosphorus by *Helisoma duryi normale*, its distribution in the tissues and its elimination. The greatest concentration was in the hepatopancreas. They suggest that by using labelled copper sulphate the details of its molluscicidal action could be investigated. S.W.

(388c) Fraga de Azevedo & Carvao Gomes exposed four species of planorbid and one melaniid to gamma radiation. *Melania tuberculata* was killed by about 213 roentgens, *Australorbis glabratus* by about 1,200 and *Planorbarius metidjensis* and *Biomphalaria pfeifferi* by 1,750. *Planorbarius corneus* proved to be extraordinarily resistant, surviving in good condition 3,109 hours of exposure to a total of 7,461 roentgens. S.W.

(388d) The authors describe a technique for obtaining miracidia of *Schistosoma mansoni* from experimentally infected hamsters or mice. Essentially, the liver is teased or the gut cut into small pieces in saline, removed to fresh water at 25°C. and exposed to a bright light. The miracidia can be collected after 10 to 15 minutes. Details are given. S.W.

(388e) Deschiens & Molinari tested zinc oxide and metaldehyde as molluscicides in aquaria (75-100 litre capacity) containing *Planorbis glabratus* and *Bulinus contortus*. After 15 days all the snails in the aquarium with zinc oxide were dead; metaldehyde acted more quickly, killing the whole population in less than nine days. Because of their insolubility in water they will act for a long time and they do not make the water unfit for consumption. S.W.

(388f) Thooris *et al.* have studied the methods for diagnosing filariasis bancrofti and they conclude, from observations on a very large number of cases in Tahiti, that the combined evidence of clinical signs and examination of the blood for microfilariae are the most satisfactory means at present available. Skin tests with *Dirofilaria immitis* extract did not prove very reliable. The efficacy of various dosage regimens with diethylcarbamazine as a prophylactic was also analysed and that giving the best results proved to be treatment of the whole population with 3 mg. per kg. body-weight twice a day for one day in each month. At the end of four years this reduced the rate of transmission to a minimum and control thereafter appeared possible. In addition they recommend the treatment of hydrocele with sclerosing injections and of elephantiasis by the application of a paste of the Unna type to the skin, under a tight elastic bandage. S.W.

(388g) After a general introduction Lavier discusses the pathogenicity of *Schistosoma japonicum*, *S. mansoni* and *S. haematobium* under the different organs or organ systems which they affect. S.W.

(388i) Gaschen *et al.* present evidence that echinostome cercariae caused a serious outbreak of swimmers' itch amongst bathers in the swimming pool at Vevey. The pool, which is separated from the main part of Lake Geneva by a dam provided with large openings through which the water is renewed, contained numerous *Bithynia tentaculata* and *Limnaea stagnalis*. *B. tentaculata* emitted gymnocephalous cercariae which the authors describe and name *Cercaria lemanensis I* n.sp.; no rediae were observed. *L. stagnalis* shed two types of echinostome cercaria, *C. lemanensis II* n.sp. and *C. lemanensis III* n.sp., which are described. Rediae of both were observed; those of the former were typically echinostome but those of the latter were curious, having the body divided into four parts. S.W.

(388j) This collection of aquatic molluscs was presented by Schwetz under the main headings of lacustrine, marsh-dwelling and fluviatile planorbids, and *Physopsis*, *Bulinus* and *Pyrgophysa*; it was followed by a section on general aspects including a review of some recent literature on the identity of the various schistosome intermediaries, and a discussion of the application of the rules of zoological nomenclature to the African Planorbidae. S.W.

(388l) Buttner details precise, technical information on the maintenance of *Schistosoma mansoni* in the laboratory based on her own experiences and on the published reports of other workers. S.W.

(388m) Wright summarizes the data at present available on the factors which influence the susceptibility of snails to schistosome miracidia. These include light, temperature, pH, oxygen tension, time, immunity (both natural and acquired) and resistance. He suggests that there may be a relationship between the sexual cycle of hermaphrodite snails and the development of age resistance. S.W.

(388n) Schneider reviews critically the drugs used in the treatment of schistosomiasis and concludes that not one is satisfactory. Of the numerous substances which have been tested only two groups, namely, antimony compounds and thioxanthenes, show promise. S.W.

(388o) Friedheim treated 19 cases of schistosomiasis haematobia with antimony dimercaptosuccinate (TWSb) given intravenously over a period of four to eight days. Six of the patients ceased to pass viable eggs as early as the sixth day after beginning the treatment; all were negative by the end of the treatment and remained so during the time they continued under observation, as long as 207 days in eight cases. Side effects, of which repeated vomiting was the most serious, caused the injections to be stopped in one case. S.W.

(388q) Vermeil discusses the chemicals which are used as molluscicides, the vegetable extracts which are toxic to snails, the bacteria which have been shown to infect them, the animals which prey upon them or parasitize them and the effect on snail colonies of upsetting the biological equilibrium. In conclusion he stresses the need for improving the means of applying molluscicides, for developing new chemicals which are less costly and more active, for introducing new agents for the biological control of schistosome intermediaries and for further investigation of the factors in the environment which, when altered, will bring about the substitution of a different fauna for that of the schistosome vectors. S.W.

(388r) Deschiens summarizes and discusses the various chemical and biological means of controlling schistosome intermediaries and points out the advantages of using substances which are insoluble, or nearly so, in water. S.W.

389—Bulletin de la Société Zoologique de France.

- a. GOLVAN, Y. J., 1956.—"Acanthocéphales d'oiseaux. Note additionnelle. *Pseudoporrorchis rotundatus* (O. von Linstow 1897) (Palaeacanthocephala—Polymorphidae), parasite d'un Cuculidae, *Centropus madagascariensis* (Briss.)." 81 (5/6), 339-344.
- b. GOLVAN, Y. J., 1956.—"Acanthocéphales d'oiseaux. (Cinquième note). Les espèces du genre *Oligacanthorhynchus* Travassos 1915 (Archiacanthocephala—Oligacanthorhynchidae Meyer 1931) dans l'ancien monde." 81 (5/6), 344-353.
- c. GALLIEN, L., 1956.—"Deux espèces nouvelles de polystome africains." 81 (5/6), 369-374.

(389a) Golvan adds to his recent study of the genus *Pseudoporrorchis*, published in *Bull. Soc. zool. France*, 1956, 81, 62-71, an illustrated description of *Pseudoporrorchis rotundatus* (v. Linstow, 1897) in *Centropus madagascariensis* from Madagascar, and considers it a valid species although it closely resembles *P. centropi*. R.T.L.

(389b) The geographical range of *Nephridiorhynchus major* is now extended by its discovery in a species of Erinaceidae in Teheran. *Echinorhynchus ricinoides* (Rud., 1809) from *Coracias garrula* on the shores of the Caspian Sea is described and figured and it is shown to belong to *Oligacanthorhynchus*. The geographical range of this genus hitherto confined to the New World is thus also extended. *E. ricinoides* and the three other Old World species, *Echinorhynchus compressus* (Rud., 1802) *E. lagenaeformis* Westrumb, 1821 and *E. oligacanthus* Rud., 1819 are transferred to *Oligacanthorhynchus* as new combinations. R.T.L.

(389c) *Polystoma mangeloti* n.sp. from *Rana* (*Ptychadaena*) *superciliaris* and *P. cachani* n.sp. from *R. (P.) longirostris*, both from the Ivory Coast, are described and figured. *P. mangeloti* has two transverse commissures joining the main gut branches, whereas *P. integerrimum* has three and *P. xenopi* none. The characteristic feature of *P. cachani* is the situation of the ovary in the posterior part of the body. R.T.L.

390—Bulletin. State Plant Board of Florida.

- a. CHITWOOD, B. G. & BIRCHFIELD, W., 1956.—“Nematodes, their kinds and characteristics.” 2 (9), 3-49.

(390a) This is a popular paper giving a short account of the different kinds of parasitism shown by plant-parasitic nematodes, followed by illustrated descriptions of the main groups of nematodes, the crops attacked, the damage caused and some general control measures. A comprehensive list of what the authors consider the best control methods and the parasite to which they are applicable includes thermotherapy and chemotherapy of the host, cultural practices, soil treatment and biological control. References are given to papers in which the methods are described. A series of 22 photographs illustrates nematode damage to plants and some of the control methods.

M.T.F.

391—Bulletin of the World Health Organization.

- a. JOVE, J. A., 1956.—“Use of molluscicides in the control of bilharziasis in Venezuela. Equipment and methods of application.” 14 (4), 617-638. [French summary pp. 633-634.]
- b. KLOCK, J. W., 1956.—“An automatic molluscicide dispenser for use in flowing water.” 14 (4), 639-646. [French summary p. 646.]
- c. BLAIR, D. M., 1956.—“Bilharziasis survey in British West and East Africa, Nyasaland and the Rhodesias.” 15 (1/2), 203-273. [French summary p. 271.]

(391a) Jove lists the personnel and describes in detail the equipment required for molluscicidal campaigns, with particular reference to the control of schistosome vectors in both running and still waters in Venezuela. Copper sulphate, sodium pentachlorophenate and a combination of the two which produces a colloidal suspension of copper pentachlorophenate have been used: the last mentioned, although it has only been used in the field for a year, appears to be the most promising molluscicide yet tested, especially in running water. By applying 15 p.p.m. of each component for six hours complete eradication of the snails appears to be achieved.

S.W.

(391b) Klock describes and illustrates with detailed diagrams an apparatus for the automatic application of molluscicides to flowing water. Basically the equipment consists of a measuring weir coupled to a self-operating dispenser which is a float-activated siphon. The dispenser contains a concentrated solution of the molluscicide and the rate at which this siphons out is controlled by the quantity of water flowing in the stream. Six instruments, of which two have been in operation for four months, have been tested in the field with very satisfactory results.

S.W.

(391c) Blair reviews published data and adds many personal observations on the incidence, treatment and field surveys of schistosomiasis in each of the British territories, Gambia, Sierra Leone, British Togoland, Nigeria, Kenya, Uganda, Tanganyika, Zanzibar, Southern Rhodesia, Northern Rhodesia, Nyasaland and in Ghana. In a separate section he considers the various methods of obtaining data on morbidity, intensity of infection, on the effects of schistosome infection on health, the various methods of treatment and of collecting, identifying and controlling the molluscan vectors.

R.T.L.

392—Bulletin of Zoological Nomenclature.

- a. DALMAT, H. T., 1956.—“Proposed determination under the plenary powers, of the authorship of, and of the original reference for, the name ‘*Filaria volvulus*’ (Class Nematoda) and proposed validation under the same powers of the emendation from ‘*vovulus*’ to ‘*vovulus*’ of the specific name of this species.” 12 (3), 86-89.

(392a) Dalmat presents to the International Commission on Zoological Nomenclature reasons for the use of its Plenary Powers to place the name *vovulus* (an emendation of *vovulus*) Leuckart [1892] as published in the combination *Filaria volvulus* on the Official List of Specific Names in Zoology and the specific names *vovulus* Leuckart [1892], *vovulans* Railliet, 1893 and *vovulxus* Manson, 1893 on the Official Index of Rejected and Invalid Specific Names in Zoology.

R.T.L.

393—Canadian Journal of Zoology.

- a. MARGOLIS, L. & ADAMS, J. R., 1956.—“Description of *Genolinea oncorhynchi* n.sp. (Trematoda: Hemiuiridae) from *Oncorhynchus gorbusha* in British Columbia with notes on the genus.” **34** (6), 573–577.
- b. TURNBULL, E. R., 1956.—“*Gyrodactylus bullatarudis* n.sp. from *Lebistes reticulatus* Peters with a study of its life cycle.” **34** (6), 583–594.
- c. WEBSTER, G. A. & WOLFGANG, R. W., 1956.—“*Alaria canadensis* sp.nov. and *Euryhelminis pyriformis* sp.nov. from the skunk *Mephitis mephitis* in Quebec.” **34** (6), 595–601.
- d. WEBSTER, G. A., 1956.—“A preliminary report on the biology of *Toxocara canis* (Werner, 1782).” **34** (6), 725–727.

(393a) *Genolinea oncorhynchi* n.sp., is described and figured from a Pacific pink salmon, *Oncorhynchus gorbusha*, from British Columbia. It differs from the seven other species of the genus in its small size and the more compact and relatively larger gonads. It is distinct from all but *G. laticauda* in having sphincter muscles in the acetabulum.

R.T.L.

(393b) *Gyrodactylus bullatarudis* n.sp., from the guppy, has two swellings on the dorsal bar which distinguish it from *G. stephanus* and *G. stegurus*, which it closely resembles, and from most species by long anterior projections on the ventral bar. The life-cycle is completed on the guppy from egg to egg-producing adult in about 60 hours at 25°C.–27°C.

R.T.L.

(393c) From the skunk, *Mephitis mephitis*, in Quebec Province two new trematodes are reported viz., (i) *Alaria canadensis* n.sp., which is characterized by a pharynx equal or subequal in size to the oral sucker. The anterior testis is definitely bilobed and the posterior one trilobed. (ii) *Euryhelminis pyriformis* n.sp., is based on a single specimen and closely resembles *E. pacificus* but is larger, has a large papilliform gonotyle, dendritic anterior vitellaria and only one testis.

R.T.L.

(393d) Preliminary results indicate that in dogs the liver-lung migration of *Toxocara canis* larvae is an essential step and is not by-passed by those larvae destined for a somatic existence. Larvae were not found in the body-cavity. Somatic migration is more frequent in female than in male dogs. When female mice were fed with *T. canis* eggs during the first, second and early half of the third week of gestation second-stage larvae were always found in their litters. The litters of mice which had been infected with *T. canis* eggs and kept for a period before breeding were negative with one exception from which a few second-stage larvae were recovered.

R.T.L.

394—Československá Parasitologie.

- a. BĀRTÍK, M., PECHA, J. & BEZDĚKOVÁ, J., 1956.—“Nález motolice *Echinostomum coalitum* u jihomoravských ondatr.” **3**, 9–11. [German & Russian summaries p. 11.]
- b. DYK, V., 1956.—“Parasitofauna ryb tatranských ples.” **3**, 33–42. [German & Russian summaries pp. 41–42.]
- c. DYK, V. & DYKOVÁ, S., 1956.—“Hlístice nalezené v dovezených želvách řeckých (*Testudo graeca* L.).” **3**, 43–48. [German & Russian summaries p. 48.]
- d. ERHARDOVÁ, B., 1956.—“Parasitičtí červi našich myšovitých hlodavců, II.” **3**, 49–66. [German & Russian summaries pp. 64–65.]
- e. GROSCHAFT, J., 1956.—“Nálezy roupovitých (Oxyuroidea) u laboratorně chovaných švábů (Blattoidea).” **3**, 67–74. [German & Russian summaries pp. 73–74.]
- f. PETROVICKÝ, O., 1956.—“Generalisovaná cysticercósa a současná infekce toxoplasmatická.” **3**, 77–80. [English, German & Russian summaries pp. 79–80.]
- g. PROKOPIČ, J., 1956.—“Helmintofauna rejska obecného (*Sorex araneus* L.) v ČSR.” **3**, 109–131. [English & Russian summaries, pp. 129–130.]
- h. RYŠAVÝ, B., 1956.—“Cizopasní červi netopýrů (Microchiroptera) přezimujících v některých jeskyních Československa.” **3**, 161–179. [German & Russian summaries pp. 177–178.]

(394a) *Echinostoma coalitum* was found in eight out of 32 *Ondatra zibethica* examined in southern Moravia. Although these animals became acclimatized in Czechoslovakia forty years ago they have retained their specific parasite.

G.I.P.

(394b) The only helminths found in the local and mainly acclimatized fish in three lakes in the high Tatry mountains were *Crepidostomum farionis* in the brook and lake trout and *Neoechinorhynchus rutili* in the trout, the common American char and the golden orfe. The last-mentioned, having considerably multiplied since its introduction into lake Strbské, is now an undesirable reservoir of these infections for the Salmonidae. Older fish do not suffer greatly from these infections but in young fish after overwintering, a hunger period or spawning, even low infections can be harmful. G.I.P.

(394c) The four nematodes found in an imported *Testudo graeca*, which had spent the winter in Brno and died in the spring, were *Atractis dactyluris* (massive infection), *Angusticaecum holopterum*, *Mehdiella microstoma* and three females of *Tachygonetria thapari*. A second tortoise which had been imported two years previously was infected with *A. holopterum* only. G.I.P.

(394d) In this helminthological survey a total of 1,930 Muridae belonging to 11 species from various parts of Czechoslovakia were examined. Descriptions are given for those of the 31 helminth species found which had not already been described in the first part of this work [see *Zoologické a Entomologické Listy*, 1955, 1 (4), 71-90]. The 31 helminths are listed under their hosts. *Longistriata dalrymplei* is recorded for the first time from *Microtus agrestis* and for Europe. The specimens of *Andrya microti* var. *bohémica* differed from those of *A. microti*, described by Hansen in 1947 from Nebraska, by the smaller size of all organs and the smaller number of testes. Erhardová, agreeing with Desportes (1943), proposes to make *Heligmosomum halli* a synonym of *H. costellatum*. G.I.P.

(394e) *Hammerschmidtella diesingi* and females of *Leidynema appendiculata*, *Thelastoma bulhoesi* and *Blatticola blattae* were found in the intestines of the cockroaches *Blattella germanica*, *Periplaneta americana* and *Blatta orientalis* which had been reared in a laboratory in Prague. *B. orientalis* is a new host for *T. bulhoesi*. G.I.P.

(394g) Three species of Trematoda, eleven of Cestoda, nine of Nematoda and one of Acanthocephala were found in 129 out of 175 *Sorex araneus* from the Danube area in southern Slovakia. All were new for Czechoslovakia. Those most frequently present were *Centrorhynchus buteonis* (29%) and *Longistriata depressa* (13%). A table of the distribution of the helminths in different habitats shows that the shrews were most highly infected in their most characteristic biotope, i.e. forests. All the helminths known for *S. araneus* are listed with the countries of their occurrence and their other hosts. G.I.P.

(394h) Of 289 bats, belonging to 11 species, examined in Czechoslovakia, 41% were infected with 16 species of helminths. Two new trematodes are described and figured from *Rhinolophus ferrum-equinum*. *Prosthodendrium magnum* n.sp. is similar in its size to *P. erhardovae* but its vitellaria are spread over the whole body width and the ovary lies anterior to the ventral sucker, while in *P. erhardovae* the vitellaria are in rosettes at the sides of the body and the ovary is below the ventral sucker. *Travassodendrium rhinolophi* n.sp. is near to *T. bhaleraoi* in the arrangement and shape of the organs but is only half the size (0.749 to 0.969 mm. long), has a relatively larger cirrus pouch (0.152 × 0.120 mm.), a small number of vitelline bodies and smaller eggs (0.022 to 0.029 × 0.014 to 0.019 mm.). G.I.P.

395—Ceylon Veterinary Journal.

- a. TAYLOR, E. L., 1956.—"Symposium on factors influencing host-parasitic relationships." 4 (2), 42-45.
- b. SHANMUGALINGAM, K., 1956.—"Neoascariasis in buffalo calves in Ceylon. I. The incidence of *Neoascaris vitulorum* (Goeze, 1782) in buffaloes, cattle and goats." 4 (2), 46-50.
- c. SHOHO, C., 1956.—"Cerebro-spinal nematodiasis (setariasis) in abnormal or inadequate hosts." 4 (3), 75-77.
- d. SARWAR, M. M. & SHAIKH, I. Y., 1956.—"Helminthiasis in an East Pakistan elephant with a short review of the literature." 4 (3), 83-84.

(395a) [This paper is reprinted from *Proc. R. Soc. Med.*, 1955, 48, 1059-1062. For abstract see *Helm. Abs.*, 24, No. 278a.]

(395b) Examination of the faeces of buffalo calves in Ceylon showed that 63 out of 66 of those one to 37 days old were positive for *Neoscaris vitulorum* with the highest incidence in those of 15 to 31 days old. They became negative between the 29th and 40th days after birth. It is therefore suggested that as the worms reach sexual maturity 15 to 31 days after birth anthelmintic treatment should be on or before the 15th day. Examination of 68 neat cattle calves gave similar results. The presence of *Neoscaris vitulorum* in two goats in Ceylon is recorded for the first time. R.T.L.

(395c) Shoho cites reports which indicate that cerebrospinal nematodiasis can develop in normal as well as abnormal hosts of *Setaria digitata* and recalls that he found six or seven cases among 4,000 cattle in Japan. He has observed that buffaloes are normal hosts for *S. digitata* and are known to acquire filarial infections in the brain. His study of specimens of *Setaria* from the U.S.A., Venezuela, Spain, France, Switzerland, India, Malaya, Indo-China, Ceylon and Japan has shown distinct morphological differences between those of bovine and those of cervine origin. He successfully treated one bovine with 80 mg. per kg. body-weight of caricide followed the next day by 60 mg. per kg. He considers that to ascertain the presence of cerebrospinal nematodiasis the parasite and the lesions must be identified. As the search for parasites destroys the brain and cord different animals must be used for a study of the lesions. M.MCK.

(395d) A male of *Parabronema africanum*, known hitherto only from African elephants, was found on the liver of a young elephant which died in Karachi three months after capture in East Pakistan. Other nematodes were found in the intestines virtually in millions and were identified as *Grammocephalus varedatus* and *Bathmostomum sangeri*. Sarwar & Shaikh review reports implicating nematodes as the cause of death of elephants in captivity and urge attention to this problem by those in charge of elephants. M.MCK.

396—Chinese Medical Journal. Peking.

- a. CHUNG, H. L., HOU, T. C. & WENG, H. C., 1956.—“Further studies on paragonimiasis complement fixation test and cross complement fixation reactions of sera of patients with paragonimiasis, clonorchiasis and schistosomiasis to different trematode antigens.” 74 (3), 207–222. [Russian summary p. 222.]
- b. DAO, C., FU, F. & CH'I, W. L., 1956.—“Pulmonary manifestations in schistosomiasis following tartar emetic therapy.” 74 (3), 268–274. [Russian summary p. 272.]
- c. CHUNG, H. L., WENG, H. C. & LI, J., 1956.—“Use of ‘liver-ova antigen’ in the immunodiagnosis of schistosomiasis.” 74 (4), 340–348.
- d. CH'IN, W. C. & CH'EN, H. J., 1956.—“Cerebral paragonimiasis complicated by epidemic B encephalitis.” 74 (4), 387–392.
- e. WANG, H. C., T'ANG, C. H., LIU, H. H. & KAO, H. M., 1956.—“Biliary ascariasis. An analysis of 141 cases.” 74 (5), 445–455.
- f. FU, F. Y., CH'I, W. L., HO, T. C., WANG, C. L. & WANG, C., 1956.—“Basophilic stippling. A hematological finding in tartar emetic therapy.” 74 (6), 551–554.
- g. KOANG, N. K., TUNG, T. C., TCH'EN, K. L. & HSUEH, C. S., 1956.—“The use of ACTH in treating acute schistosomiasis japonica. A preliminary report.” 74 (6), 555–559.

(396a) Chung *et al.* describe the preparation of dried powdered antigen from young *Paragonimus westermani*, using neutral glass powder as a diluent to facilitate accurate weighing of small quantities. They found this antigen to be more stable, reliable and economical than saline extract antigen for the diagnosis of paragonimiasis; it could be stored for more than eight months in a refrigerator without marked loss of potency and could be used satisfactorily for micromethod complement fixation tests. The micromethod was shown to be more sensitive and no less specific than Kolmer's half-volume test. The sera of 50 out of 51 infected persons and the cerebrospinal fluid of 20 out of 24 with cerebral involvement showed positive reactions. No false positives were observed in the cerebrospinal fluid of paragonimiasis patients without cerebral involvement or in patients with other diseases of the central nervous system. Cross reactions with the sera of cases of paragonimiasis, clonorchiasis and schistosomiasis with antigens from *Paragonimus westermani*, *Fasciola hepatica*, *Clonorchis sinensis* and *Schistosoma japonicum* were observed and the significance of these is discussed. Sera of cats experimentally

infected with metacercariae of *P. westermanii* showed positive complement fixation 14 to 26 days later, before any eggs appeared in the faeces, indicating that this test may prove of value in the early diagnosis of paragonimiasis in man. S.W.

(396b) The characteristic pulmonary changes which followed treatment by potassium antimony tartrate in three cases of acute schistosomiasis and one chronic case are listed. The self limited course of the complications and the apparent well-being of the patients helped to differentiate the condition. A fresh dissemination of the eggs to the lungs is considered to be more probably the cause of the lesions than a reactivation of pre-existing lesions. R.T.L.

(396c) Chung *et al.* describe the preparation of a new type of antigen for use in intradermal and complement fixation tests in the diagnosis of schistosomiasis japonica. This "liver-ova antigen" was prepared from the livers of rabbits infected with 800-1,000 cercariae of *Schistosoma japonicum*; the adult flukes were removed and the liver ground into a fine paste, dried, pulverized and kept in a refrigerator. The powder was then extracted in normal saline, kept for 48 hours (for the intradermal test) or 24 hours (for C.F.T.) before centrifuging and preparing for use. The intradermal test was made on 78 patients of whom 64 had not been treated and 14 had been cured of the infection: at a dilution of 1:1,000, 95.2% of the untreated and 64.2% of the treated were positive, and at dilution of 1:2,000 the figures were 89.1% and 64.3% positive respectively. False positives were obtained in two out of eight patients with paragonimiasis amongst the controls. The sera of 126 untreated cases and 15 cured cases were examined by complement fixation tests. Of the untreated cases 84.2% of 114 with eggs in the stools and 58.3% of those with negative stools were positive; of the 15 cured cases only 46.7% were positive. Two out of four persons with paragonimiasis were also positive. The intradermal test with "liver-ova antigen" is recommended for mass surveys. S.W.

(396d) Ch'in & Ch'en report a fatal case of cerebral paragonimiasis in which there was a wide-spread inflammatory reaction, including softening and glia nodule formation, throughout the central nervous system in addition to the localized lesions caused by the flukes. Their pathological findings indicate that the paragonimiasis was complicated by epidemic B encephalitis and they consider that, by damaging the brain blood barrier, the flukes facilitate the passage of the virus into the brain tissue. S.W.

(396f) While treating 142 cases of schistosomiasis japonica with tartar emetic the authors observed that the number of erythrocytes which showed basophilic stippling increased. Before treatment only two of the patients had stippled cells at the rate of three and five per 50 oil immersion fields respectively; half-way through the course of treatment 66 showed stippled cell counts ranging from five to 160; at the end of treatment most of these showed a further rise and 14 additional cases showed counts of five to 23. It appeared that patients in which the anaemia was most marked showed a greater tendency for the stippled cells to increase. S.W.

(396g) Koang *et al.* have treated 13 acute cases of schistosomiasis japonica with ACTH and tartar emetic with good results. The regimen finally adopted was an initial dose of 2.5 mg. or 5 mg. of ACTH, followed by a maintenance dose of 1.0 mg. to 2.5 mg. given daily in 1,000 c.c. of 5% glucose solution through a slow intravenous drip lasting at least 12 hours. After one week potassium antimony tartrate was administered at the rate of 0.03 gm. to 0.07 gm. per day to a total dose of about 0.024 gm. per kg. body-weight. Only one patient showed side effects to the ACTH therapy, developing ascites and phlebitis. S.W.

397—Circular. Georgia College of Agriculture.

a. PRESTON, J. B., 1956.—"Control of root-knot in flue-cured tobacco." No. 400, 8 pp.

(397a) The most serious disease of flue-cured tobacco in Georgia is root-knot (*Meloidogyne* spp.). Rotation with resistant crops is the most practical method of control.

A three to four-year rotation including as many different crops as possible is considered best and no crop but tobacco should be grown more often than once in four to six years. Suitable rotations are suggested for upland and lowland conditions. It is emphasized that rotation does not eliminate eelworms. If the infestation is very severe, or land is limited, soil fumigation may be advisable. Instructions are given for fumigation with ethylene dibromide and D-D mixture. It is pointed out that tobacco seed-beds may be infested and control measures should be carried out there too.

M.T.F.

398—Circular. Montana Agricultural Experiment Station.

- a. MARQUARDT, W. C. & SEGHETTI, L., 1956.—“Internal parasites of sheep.” No. 212, 14 pp.

399—Comptes Rendus des Séances de la Société de Biologie. Paris.

- a. TALICE, R. V. & GURRI, J., 1956.—“Observations sur un nouveau cas d'hypertrophie végétante de la chitinoase hydatique.” 150 (8/9), 1659-1660.
- b. ROCHE, J., THOAI, N. v., ROBIN, Y. & PRADEL, L. A., 1956.—“Sur la présence d'un dérivé guanidique nouveau dans le muscle de la sangsue, *Hirudo medicinalis* L.” 150 (10), 1684-1686.

400—Cornell Veterinarian.

- a. KRULL, W. H., 1956.—“Experiments involving potential definitive hosts of *Dicrocoelium dendriticum* (Rudolphi, 1819) Looss, 1899: *Dicrocoeliidae*.” 46 (4), 511-525.

(400a) The rate of growth of *Dicrocoelium dendriticum* in experimentally infected white mice, golden hamsters, guinea-pigs and domesticated rabbits varied considerably in individuals and in host species. The maximum size increased with that of the host species, e.g. in the mouse 3.5 mm., in the guinea-pig 7.5 mm., in the golden hamster 8.5 mm. and in the rabbit 13.0 mm. In the white mouse the flukes remained for months without growing or attaining maturity. The golden hamster was the best host for screening purposes as large numbers of the metacercariae developed and the flukes became relatively large.

R.T.L.

401—Deutsche Gartenbau.

- a. DIETER, A., 1956.—“Einfluss von Nematodenbevölkerungen auf den Ertrag von Champignonzuchtanlagen.” 3 (6), 149-151.

(401a) After a brief review of the relationships of nematode and mushroom production, Dieter describes the results of extraction, by Baermann funnel, of nematodes from different samples of compost and compares the numbers of nematodes with the crop of mushrooms produced. The nematodes included species of *Rhabditis*, *Diplogaster*, *Cephalobus*, *Iotonchium* and *Dirtylenchus*.

J.B.G.

402—Deutsche Medizinische Wochenschrift.

- a. WECHSELBERG, K., 1956.—“Zur Verträglichkeit des Piperazins.” 81 (16), 632, 637-639.

(402a) Wechselberg reports three cases in which the administration of piperazine preparations to young children led to neurotoxic symptoms of varying severity. In two of these massive overdoses (in one instance piperazine citrate and in the other the adipate) were taken by accident and in the third, twice the normal dose of the adipate was given. All recovered completely within three days. The fact that 200 children have been treated with piperazine at the Cologne Children's Clinic without untoward effect leads Wechselberg to conclude that piperazine, provided that it is given with adequate supervision and is not administered to children with affections of the central nervous system, is an efficient and safe anthelmintic.

A.E.F.

403—Deutsche Tierärztliche Wochenschrift.

- a. ENIGK, K., 1956.—“Die Bekämpfung des Leberegelbefalles.” **63** (41/42), 425-428.

(403a) *Fasciola hepatica* infections have increased steadily in Germany and cannot be eradicated by regular treatment of stock. But it has been shown in several parts of Germany that the vector, *Limnaea truncatula*, can be eradicated with sodium pentachlorophenate. V. Bulow (shortly to be reported in a thesis) has found that all snails were killed on pastures treated with this chemical at the rate of 1 gm. per sq.m. and in ditches at the rate of 5 gm. per cu.m. For the first application to ditches, double strength is advisable; if this is done in mid-April the main ditches should be sprayed again in mid-July and mid-September. Those flowing towards waters rich in fish should be dammed for at least eight days after treatment. As sodium pentachlorophenate is harmful to the skin, suitable protection must be worn.

M.MCK.

404—Deutsches Medizinisches Journal.

- a. SCHRÖDER, U., 1956.—“Die Oxyuriasis als Gemeinschaftsinfektion und ihre Behandlung.” **7** (14), 517-519.

(404a) Schröder has examined 240 children at a children's hospital in the Rhineland and found 70% positive for *Enterobius*; in the 10-12 age group 98% were infected. Of 65 children treated with the piperazine preparation Uvilon for seven days 55 were cured. The drug was willingly taken and there were no side effects even when the dosage was raised to 250 mg. per kg. body-weight.

A.E.F.

405—Dissertation Abstracts.

- a. DAHLSTROM, R. V., 1956.—“Biochemical studies on the golden nematode (*Heterodera rostochiensis* Wollenweber) hatching factor.” **16** (1), 17-19.
b. HARRISON, M. B., 1956.—“Moisture and other environmental factors in relation to the control of nematodes by fumigation, with special reference to the golden nematode.” **16** (2), 193.

(405a) An abstract is given of a thesis in which experiments were made to try to eliminate the need for hatching tests on cysts of *Heterodera rostochiensis* by the use of an organism which would respond to the potato-root eelworm hatching factor which is present in root diffusates of host plants. The fungus *Aspergillus awamori* Nakazawa was isolated from soil around tomato roots. It responded to concentrates of hatching factor by increased mould pad weight and by increased acidity in a medium containing glucose, salts, yeast, peptone and sodium acetate. A number of factors were shown to influence the acid production of the fungus and its response to the hatching factor. Chromatography gave an Rf value of 0.87 which corresponds to that obtained when the nematode is used as the test organism. The hatching factor had a stimulating effect on glucose oxidation by *Aspergillus awamori* in the presence of boiled yeast or a flavin nucleotide extract of *E. ashbyii*. Glucose oxidation by cells of *Pseudomonas aeruginosa* was also stimulated by the hatching factor but it did not stimulate the oxidation of gluconic acid. Cell-free juices oxidized glucose and gluconic acid rapidly and glucose-6-phosphate slowly, but the presence of hatching factor did not stimulate oxygen uptake. Other experiments suggested that phosphorylation of the factor was necessary before it stimulated glucose oxidation.

M.T.F.

(405b) Four nematicides, 1,2-dichloropropane and 1,3-dichloropropene, trichloronitromethane, 1,2-dibromoethane and sodium N-methyl dithiocarbamate dihydrate, were used to fumigate cysts of *Heterodera rostochiensis* in glass chambers at 10°, 20° and 30°C. There was no significant difference in the degree of control at the different temperatures, but control was directly proportional to the humidity at the time of fumigation and cysts kept at a high relative humidity for two weeks before fumigation were more susceptible than others. In a study of lateral diffusion of D-D mixture and ethylene dibromide in two soils of different moisture equivalents it was found that *Meoidogyne* sp. and *Xiphinema* sp. were controlled at

405—Dissertation Abstracts (cont.)

- c. JOHNSON, A. A., 1956.—“Life history studies on *Hydromermis contorta* (Kohn), a nematode parasite of *Chironomus plumosus* (L.).” **16** (2), 409-410.
- d. LACEY, R. J., 1956.—“A comparative morphological study on the nervous system of three orders of cestodes.” **16** (2), 410.
- e. REYNOLDS, H. W., 1956.—“Root-knot nematode development and root tissue responses of the rose.” **16** (3), 434.
- f. MANKAU, S. K., 1956.—“Some observations on the histogenesis and histopathology of *Echinococcus alveolaris* (Klemm), in white mice.” **16** (5), 1021.
- g. ROBINSON, T., 1956.—“Factors influencing emergence of larvae of the golden nematode (*Heterodera rostochiensis* Wollenweber).” **16** (8), 1335-1336.

a greater distance from the point of injection at 85°F. than at 70°F., and that temperature was more important than soil moisture equivalent or moisture content. At the same dosage rate EDB diffused further than D-D. The rate of evolution of nematicides from soil was determined by a method using *Turbatrix aceti* and it was shown that the rate was increased with increase of temperature. D-D was more effective in killing *H. rostochiensis* cysts when injected to a depth of 5 in. than 3 in. and a water seal increased its effectiveness. Cysts buried in moist soil were killed more rapidly by fumigation than others buried in dry soil and cysts which had been stored at 100% relative humidity were more susceptible in the dry soil than others stored at 10% or 50% relative humidities. Newly formed cysts were more susceptible to D-D fumigation than those one or more years old. M.T.F.

(405c) *Hydromermis contorta* has now been found in *Chironomus plumosus* larvae in mid-western lakes of the U.S.A. and especially in Lake Manitou, Indiana. The life-history of the American form is similar to that reported for the European form. The effect of the parasite on its host is very marked especially in the reduction of the fat bodies. The sperm of *H. contorta* is flagellated as in *Hexameris albicans*. R.T.L.

(405d) The basic plan of the nervous system in four pseudophyllid and one trypanorhynchid species examined consisted of two longitudinal nerve cords running the length of the strobila and connected by a transverse median commissure in the scolex. In the two cyclophyllidean forms examined (*Thysanosoma actinioides* and *Taenia pisiformis*) there are ten longitudinal cords, viz., two dorsal, two ventral and three on each lateral margin, connected by a ring commissure at the posterior margin of each segment. Nerve cells were found only in the transverse median commissure. No subcuticular plexus of nerve fibres was observed. R.T.L.

(405e) A number of seedlings of *Rosa multiflora* and *Lycopersicum esculentum* were inoculated, simultaneously, with a water suspension of viable larvae of *Meloidogyne incognita*. The life-cycle was completed in the tomato in 22 days and in the rose in 30 days. Gall formation on the tomato was evident soon after inoculation but did not occur in the rose although abundant egg masses, which could easily be overlooked, were produced on the surface of the roots. R.T.L.

(405f) Whereas the cysts of *Echinococcus alveolaris* which occur in man and occasionally in cattle are usually sterile, only 30% of the cysts in mice experimentally infected were sterile. In fertile cysts scolex formation began three to four months after infection. The brood capsules became multiple and tended to fill the cyst. The usual focus of primary infection is the liver but the lung, spleen, pancreas and gut may also be invaded. Perivascular mononucleosis is a characteristic feature, and peribronchial mononucleosis is especially frequent in pulmonary infections. The chief characteristic of the larval stage of *E. alveolaris* is that it behaves like an infiltrating neoplasm. R.T.L.

(405g) The rate of larval emergence from cysts of *Heterodera rostochiensis* was stimulated by incubation in acid media between pH 2 and pH 3. It rapidly fell on both sides of this range and was completely inhibited at pH 1. Zinc and cadmium salts strongly inhibited larval emergence. R.T.L.

405—Dissertation Abstracts (cont.)

- h. OSWALD, V. H., 1956.—“Studies on the life history of *Rictularia coloradensis* Hall, 1916 (Nematoda: Thelaziidae), a parasite of *Peromyscus leucopus noveboracensis* (Fischer).” **16** (8), 1535.
- i. SHIVNANI, G. A., 1956.—“Survival of infective larvae of some common nematodes of beef cattle on Flint hill pasture in Kansas.” **16** (8), 1535–1536.
- j. GALLICCHIO, V., 1956.—“Effects of certain antibiotics on experimental trichinosis in mice.” **16** (9), 1741.
- k. KATZ, F. F., 1956.—“The effect of irradiation on reproduction by the heterogenetic generation of *Strongyloides papillosus* (Wedl, 1856) Ransom, 1911.” **16** (9), 1742–1743.
- l. MANKAU, G. R., 1956.—“Studies on the host-parasite relationships of *Heterodera trifolii* (Goffart) Oostenbrink, 1951.” **16** (10), 1767.

(405h) *Rictularia coloradensis* occurs in the white-footed mouse, *Peromyscus leucopus noveboracensis*, in Ohio. The camel cricket, *Ceuthophilus g. gracilipes*, and a wood cockroach, *Parcoblatta virginica*, were found naturally infected with the larvae. The infective stage developed in experimentally infected German, brown-banded and wood cockroaches, field and camel crickets; but in oriental and American cockroaches, ground beetles and meal worms the larvae ceased to develop on or before the twelfth day. In German cockroaches the larva became infective as early as the tenth day. In laboratory mice the third moult occurred on the fifth or sixth day after experimental infection and became adult without the interpolation of a fourth moult.

R.T.L.

(405i) A study was made of the survival and concentration of the eggs and of viable larvae of gastro-intestinal nematodes, recovered by a modified Baermann apparatus, from cattle dung heaps and from grass on experimental plots on a Flint hill pasture in Kansas and on the campus of Kansas State College. It was found that 90°F. or higher and dryness caused a high mortality in the eggs and larvae and that larvae of *Nematodirus* sp. and *Oesophagostomum radiatum* were most resistant to summer conditions. There was a definite increase in the number of larvae, especially of *Cooperia* spp., on pasture grass during April and May followed by a decline in July, and a significant difference between the species of larvae and number of larvae recovered from different portions of blades of grass and from the grasses on different parts of a pasture. Differences in the bionomics of the larvae on the two types of plot were noted.

R.T.L.

(405j) Albino mice, having received 300 *Trichinella spiralis* larvae each by stomach tube when 43 to 91 days old, were given a daily dose of antibiotic for 14 consecutive days beginning about 24 hours later, and were autopsied on the 30th day after infection. The larvae recovered from the musculature were counted and measured. Following filipin, streptomycin sulphate, patulin, endomycin, amicitin, streptolydigin and U-6591 the numbers of larvae recovered were significantly lower than from the controls. No correlation was detected between the reduction in number of larvae and increase or decrease in their lengths.

R.T.L.

(405k) This abstract of Katz's thesis on the irradiation of *Strongyloides papillosus* gives more details of the effects on the larval stages than appeared in *J. Parasit.*, **42**, Suppl. p. 11 [for abstract see *Helm. Abs.*, **25**, No. 105bf]. Doses of approximately 20 and 40 kr are critical, but the doses used did not prevent immature females from completing their development and no conclusions as to the effect on adults could be drawn. *S. papillosus* appeared to be more resistant than *Trichinella spiralis* and *Rhabditis pellio*.

R.T.L.

(405l) The larvae of *Heterodera trifolii* penetrate the epidermal cells of Ladino clover with difficulty but are attracted to and may enter through wounds. Once the head is in the epidermis further progress is rapid. Extensive damage may be caused to the roots not only of susceptible plants but also of unsuitable or resistant hosts. *H. trifolii* develops in the normal way in spinach. Red clover is generally resistant but female nematodes occasionally develop.

405—Dissertation Abstracts (cont.)

- m. GOLDBERG, E., 1956.—“Studies on the intermediary metabolism of *Trichinella spiralis*.” 16 (10), 1968.
- n. LAURENCE, K. A., 1956.—“An electrophoretic study of the protein changes during the development of *Ascaris lumbricoides* var. *suum*.” 16 (10), 1968–1969.
- o. LEE, S. H., 1956.—“A study of the biology and life cycle of *Skrjabinoptera phrynosoma* (Ortlepp) Schulz, 1927 (Nematoda: Spiruroidea), a nematode parasite of the Texas horned toad, *Phrynosoma cornutum*.” 16 (10), 1969.
- p. LEVIN, N. L., 1956.—“Life history studies on *Porrocaecum ensicaudatum*, an avian nematode.” 16 (10), 1969.
- q. NODA, K., 1956.—“Studies on the dual antibody response of white mice to the cestode, *Hymenolepis nana* var. *fraterna*.” 16 (10), 1970.
- r. FERRIS, III, J. M., 1956.—“A study of factors influencing the susceptibility of *Solanum* species to the golden nematode, *Heterodera rostochiensis* Wollenweber.” 16 (12), 2290–2291.

A few females reached maturity in two out of 27 (unnamed) varieties of soya bean. Development was usually stunted in individual plants of lespedeza and yellow sweet clover. *Polygonum persicaria* is now recorded as a new host. When *H. trifolii* and *Meloidogyne hapla* both develop in Ladino clover roots the syncytium caused by the former is a striking contrast to the giant cells induced by the latter.

R.T.L.

(405m) [A fuller account of this work appears in *Exp. Parasit.*, 1957, 6, 367–382. For abstract see *Helm. Abs.*, 26, No. 224b.]

(405n) Electrophoretic studies of protein fractions during the maturation of *Ascaris lumbricoides* eggs indicated that young immature eggs contain electrophoretically separable components while mature eggs contain seven fractions. Glycogen is present in high concentration in the immature eggs, decreases as development proceeds and is further reduced in the infective stage. An albumin-like fraction absent from extracts of immature eggs is identifiable in the mature eggs. It is a product of uterine secretion and is found on the mamillated coat of the egg. This electrophoretic characterization of the changes in protein content may explain the dual antibody response produced in experimental infections.

R.T.L.

(405o) [A fuller account of this work appears in *J. Parasit.*, 1957, 43, 66–75. For abstract see *Helm. Abs.*, 26, No. 24k.]

(405p) *Porrocaecum ensicaudatum* is common, in Illinois, in the robin, starling and in the bronzed grackle—a new host record. The infective larva which occurred in the ventral blood vessel and heart of *Lumbricus terrestris*, *Octolasmus lacteum* and other earthworms, exsheathed within 48 hours between the horny layer and muscular wall of the gizzard. By the third day it was found in the duodenal wall. The second moult was completed by the 14th day and the worms began to emerge from the intestinal wall into the lumen on the 18th day. They had then characteristic adult features but continued to increase in size. These experiments prove that *Spiroptera turdi* Molin, 1860 is the larva of *Porrocaecum ensicaudatum* Zeder, 1800.

R.T.L.

(405q) The sera of mice infected experimentally with the eggs and adults of *Hymenolepis nana* var. *fraterna* and of immunized mice when analysed by filter paper electrophoresis showed statistically a decrease in albumin and an increase in the gamma-globulin fraction. Other experiments suggested that increase in serum proteins, especially in the gamma-globulin fraction, may be due partly to rise in antibodies. Passive immunization with 0.85% saline-soluble adult antigen conferred a high degree of resistance to the adult stage but little resistance to cysticercoid-to-adult development. Removal of the worms by drug treatment and observations during the collection of cysticercoids suggested that the mice were refractory to further infections.

R.T.L.

(405r) Of seven *Solanum* species the root diffusate of *Solanum dulcamara* was the most potent in hatching cysts of *Heterodera rostochiensis*.

R.T.L.

405—Dissertation Abstracts (cont.)

- s. GOLDEN, A. M., 1956.—“Taxonomy of the spiral nematodes (*Rotylenchus* and *Helicotylenchus*), and the biology and host-parasite relationships of *R. buxophilus* n.sp. attacking box-wood.” **16** (12), 2291.
- t. CRITES, J. L., 1956.—“Studies on the morphology, taxonomy, and life-history of *Cruzia americana* Maplestone, 1930, a parasitic nematode of *Didelphis marsupialis virginiana*.” **16** (12), 2561.
- u. CURTIN, C. B., 1956.—“The numbers and distribution of gill trematodes on the carp, *Cyprinus carpio* L., collected from three different localities.” **16** (12), 2561-2562.
- v. MONTGOMERY, W. R., 1956.—“Studies on digenetic trematodes from marine fishes of La Jolla, California.” **16** (12), 2564.

(405s) [A fuller account of this paper appeared in *Bull. Md agric. Exp. Sta.*, 1956, No. A-85, 28 pp. For abstract see *Helm. Abs.*, **25**, No. 193a.]

(405t) The specimens of *Cruzia* collected from opossums in various localities in the U.S.A. all belong to the species *Cruzia americana*. The ovum is surrounded by an inner lipoidal membrane, an intermediate chitinous shell and an outer protein membrane. The life-cycle is direct. After a first moult within the egg-shell the second-stage larva contained therein is infective. The larvae do not invade the tissues. The second, third and fourth moults occur in the caecum. The first fertile eggs are passed by the host 46 to 48 days after infection.

R.T.L.

(405u) Pymatuning Lake in Pennsylvania has been divided into three areas on the basis of differences in physical and chemical characteristics. In a survey of *Dactylogyrus* sp. and *Gyrodactylus elegans* from the gills of *Cyprinus carpio* from the three areas of the lake, Curtin found no significant differences in the numbers of trematodes on fish from different locations or on fish of either sex.

S.W.

(405v) [A fuller account of this paper appears in *Trans. Amer. micr. Soc.*, 1957, **76**, 13-36. For abstract see *Helm. Abs.*, **26**, No. 45b.]

406—Dokladi Akademii Nauk Azerbaidzhanskoi SSR.

- a. GADZHIEV, A. T., 1956.—[A study of the helminth infestation of sheep of different breeds and cross-breeds.] **12** (3), 207-211. [In Russian.]

407—Dokladi Akademii Nauk SSSR.

- a. BOGOMOLOVA, N. A., 1956.—[The role of nucleic acids in the oogenesis and fertilization of *Fasciola hepatica* L.] **110** (3), 461-464. [In Russian.]
- b. IZYUMOVA, N. A., 1956.—[The infection of voracious fishes in the Rybinsk water reservoir with larvae of *Diphylllobothrium latum*.] **110** (4), 711-712. [In Russian.]
- c. GARKAVI, B. L., 1956.—[The ability of *Hymenolepis fraterna* (Stiles, 1906) larvae to develop in mesenteric lymph nodes.] **111** (1), 240-241. [In Russian.]
- d. GOLOVIN, O. V., 1956.—[The biology of *Gnathostoma hispidum*.] **111** (1), 242-244. [In Russian.]
- e. KARMANOVA, E. M., 1956.—[An interpretation of the biological cycle of the nematode *Hystrichis tricolor* Dujardin, 1845, a parasite of domestic and wild ducks.] **111** (1), 245-247. [In Russian.]
- f. CHIZHOVA, T. P., 1956.—[The interrelationship of tapeworms in mammals and birds.] **111** (1), 250-252. [In Russian.]
- g. LOGACHEV, E. D., 1956.—[On the mutual relations between the nucleus and the cytoplasm in growing egg-cells of plathelminths. (Turbellaria).] **111** (2), 507-508. [In Russian.]

(407a) Bogomolova describes the content of desoxyribonucleic acid and ribonucleic acid in the oogonium, oocyte, vitelline cell, spermatozoon and young zygote of *Fasciola hepatica* and illustrates sections of the stained cells. The observations showed, for example, that the entire spermatozoon is intensely Feulgen-positive but the intensity falls when it swells after entering the egg. Its chromatin contains some ribonucleic acid. In the zygote the amount of desoxyribonucleic acid diminishes with the growth of the two pronuclei, which contain equal small amounts of the acid when fully formed.

G.I.P.

(407b) In view of the contradictory results obtained by Stolyarov (1952 and 1954) on the infection of fish with *Diphylllobothrium latum* larvae in the Rybinsk water reservoir, Izyumova repeated the examination of the fish used by the local population for food and found 70.3% of pike, 65.7% of perch, 37.0% of burbot and 2.1% of pike-perch to be infected. G.I.P.

(407c) *Hymenolepis fraterna* larvae, from the oncosphere to the cysticeroid stage, were found in the mesenteric lymph nodes of 16 out of 25 white mice. No larvae were present in the intestinal villi. In 18 of the mice mature worms were found in the intestine and two of the mice were uninfected. The presence in the intestine of larvae lacking a connective tissue capsule suggests to Garkavi that the larvae in the lymph nodes are able to migrate later to the intestine and mature there. G.I.P.

(407d) Eggs from *Gnathostoma hispidum* hatched after 9 to 10 days at 25°C. or 15 days at 18°C. The larvae could survive for 20 to 30 days in water at 22°C. The ten species of Cyclopidae [not named] tested all became infected. The first two moults occurred in the egg, the third and fourth in the cyclops. Larvae in the cyclops became infective after 17 days at 18°C. and 7 days at 27°C. The infective larva is 0.488–0.520 mm. long, has small spines anteriorly and the head swelling carries four rows of small hooks. The oesophagus is 0.22 mm. long. The final host becomes infected either by drinking water containing the infected cyclops or by eating flesh of the reservoir hosts, e.g. fish, amphibians or reptiles etc. G.I.P.

(407e) The complete life-cycle of *Hystrichis tricolor* lasts 270 to 300 days. The egg, which is eliminated by the duck before cleavage commences, develops in the water in 58 to 62 days to the infective first-stage larva which hatches when in the oligochaete intermediaries. In the Georgian S.S.R., 10% of *Criodrilus lacuum* and 3% of *Allolobophora dubiosa* var. *pontica* were naturally infected. The larva bores into the supra-neural vessel of the earthworm and there develops through three moults to the infective fourth-stage larva. Fish are not implicated. When the earthworms are swallowed by ducks the larvae bore into the intestinal wall and undergo a fourth moult, reaching maturity in a month. After laying eggs for 30 to 45 days the worms die. G.I.P.

(407f) Fifteen *Larus ridibundus* and three pigeons showed no sign of infection at autopsy three, five and twelve days after they had each received 15 plerocercoids of *Diphylllobothrium latum* which had been obtained from a percoid fish. G.I.P.

408—Down to Earth. Midland, Michigan.

- a. FLETCHER, F. W., 1956.—“Telone, the new Dow soil fumigant containing dichloropropene,” 12 (2), 6–7.
- b. DAVIDSON, J. H. & DIETER, C. E., 1956.—“Soil fumigation for soil borne plant parasitic nematodes in fruit tree nursery soil.” 12 (2), 26–29.

(408a) The chemical and physical properties of Telone are given together with a graph showing that control varies directly as the dichloropropene content. Telone is most efficient on sandy loam soils and the general soil conditions for optimum performance are described. Telone is claimed to be very effective in the control of root-knot nematodes, the lesion or meadow nematodes, and for cyst-forming nematodes. It is toxic to human beings. H.R.W.

(408b) Preplant fumigation of cherry orchard soils infested with lesion nematode (*Pratylenchus* sp.) was carried out in spring or autumn, using 6, 9 and 12 gal. of Dowfume W-85 (=72, 108 and 144 lb. ethylene dibromide) per acre, applied at 6–8 in. deep and 10 in. lateral spacing by chisel applicator. Improved growth of Mahaleb cherry seedlings and rootstocks and their scions, and reductions in nematode infestation resulted from all treatments, being most marked at the highest dose. Autumn treatment was superior to spring. It is claimed that an outlay of 80 dollars per acre on fumigation caused increased growth of the crop valued at 2,400 dollars. R.D.W.

409—East African Medical Journal.

- a. GINSBERG, A., 1956.—“Incidence of hydatidosis in Kenya's slaughter animals.” **33** (8), 297–300.
- b. GINSBERG, A., CAMERON, J., GODDARD, W. B. & GRIEVE, J. M., 1956.—“Bovine cysticercosis, with particular reference to East Africa.” **33** (12), 495–505.

(409a) Only since the Athi River meat works of the Kenya Meat Commission started operations has a general survey of the incidence of hydatid disease in stock in Kenya been possible. The figures so obtained are as follows: European stock, cattle (1954) 17·1%, (1955) 17·6%; sheep (1954) 23·7%, (1955) 28·4%; African stock, cattle (1954) 46·7%, (1955) 41·1%; sheep (1954) 41·9%, (1955) 53%; goats (1954) 18·03%, (1955) 15·2%. Ginsberg suggests that propaganda and health education should be undertaken among the Turkana, Masai, Suk and other tribes with large flocks of sheep and herds of cattle.

R.T.L.

(409b) By applying, with modifications, the procedure laid down in the Meat Regulations of the Union of South Africa during the routine inspection of 55,350 carcasses for bovine cysticerciasis at the Athi Meat Works in Kenya, cysts were detected in the carcass muscles of 30·6% of the 42,500 of European stock and 29·4% of the 12,850 of African stock examined. Of the infected European carcasses 17·9% carried only one cyst each, 2·1% had six cysts and 8·3% had over 20 cysts, while in the African carcasses 10·9% had one cyst each. The incidence was heaviest in the one to five-year-old males being 10·3% in the European stock and in the African stock 23·4%. In infected animals of both sexes over five years old, it fell to 3·2% of the European stock and 1·1% of the African stock.

R.T.L.

410—Empire Cotton Growing Review.

- a. WHITEHEAD, A. G., 1956.—“The role of nematodes in the *Fusarium*-wilt complex of cotton.” **33**, 278–281.

(410a) Whitehead summarizes the work which established that nematodes play a part in *Fusarium* wilt complex of cotton, and reviews methods of control of the wilt by use of nematicides or resistant varieties of cotton.

J.J.H.

411—Euphytica. Wageningen.

- a. DIJKSTRA, J., 1956.—“Experiences with the breeding of red clover resistant to the stem eelworm.” **5**, 298–307.

(411a) In these experiments stem eelworms were collected by Seinhorst's methods, seedlings were inoculated by a modification of Bingefors' method, resistance was assessed by visual observation two to three weeks after inoculation and *Bombus terrestris* was used in nest boxes for controlled pollination within cages. Within swollen seedlings (susceptible) eelworm multiplication had occurred faster (in variety Roosendaal) in greatly swollen than in slightly swollen plants, and had not occurred in resistant plants which were stunted and showed necrotic lesions. There seemed to be no regional differences of infectivity for populations of stem eelworm in Holland. Interbreeding resistant local Dutch varieties and selection produced fairly resistant families in a few years.

J.B.G.

412—Extension Circular. North Carolina State College of Agriculture.

- a. TODD, F. A. & FERGUSON, J. C., 1956.—“Soil fumigation for nematode control in tobacco.” No. 402, 15 pp.

(412a) Todd & Ferguson describe the nematodes attacking tobacco plants and recommend the soil fumigants to be used to control each species. Methods of application together with fumigation equipment are also described.

H.R.W.

413—Extension Folder. North Carolina State College of Agriculture.

- a. WELLS, J. C. & ALLISON, J. L., 1956.—“The alfalfa stem nematode.” No. 133, 4 pp.
- b. WELLS, J. C. & COOPER, W. E., 1956.—“Peanut nematode diseases.” No. 136, 6 pp.

414—Federation Proceedings. (American Societies for Experimental Biology).

- a. PASSEY, R. F. & FAIRBAIRN, D., 1956.—“Apparent synthesis of carbohydrate from fat in developing *Ascaris* eggs.” [Abstract of paper presented at the 47th Annual Meeting of the American Society of Biological Chemists, Atlantic City, April 16–20, 1956.] 15 (1), 324.
- b. ROBINSON, T. & NEAL, A. L., 1956.—“Influence of mineral elements and pH upon the hatching of golden nematode (*Heterodera rostochiensis* Wollenweber) larvae.” [Abstract of paper presented at the 47th Annual Meeting of the American Society of Biological Chemists, Atlantic City, April 16–20, 1956.] 15 (1), 338.
- c. CUCKLER, A. C., EGERTON, J. R. & FOGG, D. E., 1956.—“Anthelmintic activity of Nicarbazin.” [Abstract of paper presented at the 46th Annual Meeting of the American Society for Pharmacology and Experimental Therapeutics, Atlantic City, April 16–20, 1956.] 15 (1), 414–415.
- d. SAZ, H. J., 1956.—“Oxidative decarboxylation of malate by *Ascaris lumbricoides*.” [Abstract of paper presented at the 40th Annual Meeting of the American Association of Immunologists, Atlantic City, April 16–20, 1956.] 15 (1), 612.

(414a) Passey & Fairbairn found that carbohydrate, which was chiefly glycogen, decreased during the development of the eggs of *Ascaris lumbricoides* up to the vermiform stage. Thereafter the carbohydrate in the eggs rose to the original level. Triglycerides decreased during all periods of development, but most rapidly when carbohydrate was being synthesized. After examining all possible alternatives the authors concluded that fat was used for the synthesis of the carbohydrate in the egg. W.P.R.

(414b) Robinson & Neal found that the passage of tomato plant leachings through Amberlite IR-120 or IR-4B columns removed about one-half of the stimulus for the hatching of *Heterodera rostochiensis*. Complete activity was restored by adding the HCl eluate from the IR-120 column. The chlorides of Ca, Mg, Na, and K could replace the eluate and all were essential for the maximum activity of the cation-free concentrates of the natural stimulant. Of these cations K had the greatest effect. W.P.R.

(414c) Chickens were fed with rations containing 0.0125% of Nicarbazin and then inoculated with 1,000 embryonated eggs of *Ascaridia galli*. When examined three or seven weeks later they had about 50% fewer worms than the control birds and the worms were smaller than those on rations containing the same amount of phenothiazine. The drug was about as effective as piperazine sulphate against *Heterakis gallinae*. Pigs fed on 0.1% Nicarbazin were free from *Ascaris lumbricoides* although healed lesions due to migrating larvae were present in the liver and lungs. In mice the effect of the drug on *Schistosoma mansoni* was slight and their natural infections with pinworms were unaffected. R.T.L.

(414d) Saz showed that fumarate and malate were anaerobically decarboxylated by homogenates of the muscle of *Ascaris*. Lactate and carbon dioxide were produced. Purified fumarase-free fractions required l-malate as substrates. The decarboxylation of this substrate required Mn^{++} and coenzyme I. The purified preparations were free of lactic dehydrogenase and did not decarboxylate oxalacetate; stoichiometric amounts of pyruvate, reduced coenzyme I, and carbon dioxide were formed from malate. The addition of lactic dehydrogenase gave maximal activity. W.P.R.

415—Fortschritte der Neurologie, Psychiatrie und ihrer Grenzgebiete.

- a. HUHNS, A., 1956.—“Die Zystizerkose des Gehirns und Rückenmarkes.” 24 (1), 7–27.

(415a) Huhn presents an extensive review of the literature on cerebral cysticerciasis, dealing with pathological anatomy, clinical symptomatology, differential diagnosis, and treatment. He appends a short note on spinal cysticerciasis which he estimates to represent 10% of all cases. A.E.F.

416—Friesia. Copenhagen.

- a. SHEPHERD, A. M., 1956.—“A short survey of Danish nematophagous fungi.” 5 (3/5), 396–408.

(416a) The 19 species of predacious fungi found in various substrata in Denmark are tabulated; with one exception all are new records for Denmark. Each species is figured. *Harposporium anguillulae*, a very common parasite of nematodes, was found in rotting leaves and leaf mould. *Haptoglossa heterospora* appeared in *Ditylenchus dipsaci* isolated from infected celeriac. *Arthrobotrys dactyloides* and *Dactylaria psychrophila* are illustrated capturing nematodes.

R.T.L.

417—Gesundheits-Ingenieur.

- a. LÖLIGER-MÜLLER, B., 1956.—“Ergebnisse der Abwasseruntersuchungen im Riesegelgebiet Leipzig-Nord und Delitzsch hinsichtlich des Wurmeigehaltes.” 77 (1/2), 23–24.

(417a) Löliger-Müller has shown, as a result of his studies on Leipzig sewage, that the inadequate treatment given does not destroy helminth ova. No sedimentation takes place during the carriage of sewage to agricultural land so that the egg count is not reduced *en route*. It is also demonstrated that ova can penetrate the pores of bitumen pipes used for subsurface irrigation. A table shows the number of ova and larvae per litre of sewage for each year from 1950 to 1954.

A.E.F.

418—Giornale Italiano di Dermatologia e Sifilologia.

- a. GIANOTTI, F., 1956.—“La dermatite eritemato-pomfo-papulo-vescicolosa dei lavoratori addetti alla monda del riso. E una dermatite da cercarie di schistosomi.” 97 (1), 19–25. [English, French & German summaries p. 25.]

(418a) Gianotti describes and illustrates, by three photographs, a papular eruption on the arms and legs of rice cleaners and, by nine photomicrographs, sections showing the lesions in the skin which he attributes to schistosome cercariae.

R.T.L.

419—Glasgow Naturalist.

- a. COPLAND, W. O., 1956.—“Notes on the food and parasites of pike (*Esox lucius*) in Loch Lomond.” 18 (5), 230–235.

(419a) In Loch Lomond, 66% of the pike were infected with *Triaenophorus nodulosus*. Large numbers of Cyclops were experimentally infected and fully developed proceroids were observed 14 days later. The completion of the life-cycle in Loch Lomond appears to depend entirely on the cannibalistic habit of the pike as no plerocercoids were found in any of the local fish. *Acanthocephalus lucii* was found in 39% of the pike from Loch Lomond and in 84% from the Old Fruin. Numerous specimens of an isopod, *Asellus*, which were collected from the stomachs of pike contained juvenile *A. lucii* in the haemocoel.

R.T.L.

420—Gunma Journal of Medical Sciences.

- a. BABA, T., NAGATA, K. & AIZAWA, T., 1956.—“On the anthelmintic upon serum protein in ancylostomiasis.” 5 (4), 281–288.

(420a) Baba *et al.* have investigated the effect of treatment with tetrachlorethylene on the blood picture and serum protein in 20 cases of ancylostomiasis. In some cases Nematol (ascaridole) was also used. Before treatment the average total serum protein was slightly lower in patients than in the controls; albumin was considerably decreased, γ -globulin was decreased and α_1 , α_2 and β -globulins were increased; urinary urobilinogen was also increased. These indicate that in addition to the haemorrhage there is some functional disturbance of the liver. In some cases there was a further decrease in albumin and increases in α - and β -globulins and urinary urobilinogen following tetrachlorethylene treatment and this is attributed to the anthelmintic causing a temporary increase in hepatic dysfunction. Detailed results are given in a table.

S.W.

421—Hassadeh.

- a. MINZ, G. & BERGER, R., 1956.—[First record of the potato root nematode *Heterodera rostochiensis* Wollenweber in Israel.] **36** (11), 928. [In Hebrew.]

(421a) [A fuller account of this paper appears in *Plant Dis. Repr.*, 1956, **40**, 688–689. For abstract see *Helm. Abs.*, **25**, No. 130r.]

422—Indian Journal of Entomology.

- a. KHAN, M. Q., MURTHY, D. V. & NOMANI, M. Z. A., 1956.—“A short note on a mermithid larval parasite of *Schoenobius incertellus* W.” **18** (3), 299–300.

(422a) Khan and his co-workers found middle instar to full grown larvae of the rice stem borer (*Schoenobius incertellus*) to be parasitized by mermithid larvae. Only one nematode emerged from each host and the infected insect larvae invariably died. Of 18 larvae examined at the end of August 1956 at Rudrur, Nizamabad, seven were naturally infected. s.w.

423—Indian Journal of Malariology.

- a. KANT, L., SEN, S. K. & PURI, B. S., 1956.—“Filariasis in Patna (Bihar). Part I.” **10** (3), 199–217.
 b. SINGH, J., RAGHAVAN, N. G. S. & KRISHNASWAMI, A. K., 1956.—“Filariasis in Travancore-Cochin State. I. Ernakulam and Mattancherri.” **10** (3), 219–238.
 c. SINGH, J., KRISHNASWAMI, A. K., RAGHAVAN, N. G. S., KRISHNAMURTHY, B. S. & MAMMEN, M. L., 1956.—“Field studies on the comparative effectiveness of D.D.T., B.H.C. and dieldrin residual sprays against the vectors of Wuchereria infections.” **10** (3), 239–259.
 d. PATTANAYAK, S., RAGHAVAN, N. G. S. & KRISHNASWAMI, A. K., 1956.—“Microfilariae in domestic fowls.” **10** (3), 261–263.
 e. RAGHAVAN, N. G. S., SINGH, D. & BHATNAGAR, V. N., 1956.—“Studies on reproductive system of *Conispiculum guindiensis*. I. Production of microfilariae in vitro by *C. guindiensis*.” **10** (3), 265–268.
 f. SINGH, J., KRISHNASWAMI, A. K. & RAGHAVAN, N. G. S., 1956.—“Filariasis in Travancore-Cochin State. II. Shertallai Taluk.” **10** (4), 317–325.

(423a) In Patna city, from December 1955 to April 1956, the filarial endemicity rate was 42.7%, the disease rate 30.1% and the microfilaria rate 18.7%. The highest density of microfilariae recorded was 777 per 20 cu. mm. of blood. The youngest age with microfilariae in the night blood was two years and the youngest showing external manifestations of disease was four years. *Wuchereria bancrofti* was the only species present and the only naturally infected vector was *Culex fatigans*. R.T.L.

(423b) In Ernakulam, the filarial endemicity rate was 10.6%, the microfilarial rate 7.6% and the disease rate 3.5%. *Wuchereria bancrofti* occurred in 91.6% and *W. malayi* in 6.8%. Developing filarial larvae were found in *Culex fatigans* 3%, *Mansonioides uniformis* 0.9% and *M. annulifera* 1%. In Mattancherri the endemicity rate was 21.7%, the microfilarial rate 14.7% and the disease rate 7.6%. *W. bancrofti* occurred in 90.3%, *W. malayi* in 7.6% and mixed infections in 2.1%. Developing filarial larvae were found by dissection in *Culex fatigans* 5.5% and *Mansonioides annulifera* 1.8%. R.T.L.

(423c) Applied as water dispersible powders in field trials, benzene hexachloride at a dosage of 44 mg. of gamma isomer per sq.ft. and dieldrin at 50 mg. per sq.ft. were equally effective against *Culex fatigans* and the residual toxicity lasted for 13 to 14 weeks. Both these, and D.D.T. at 200 mg. per sq.ft. were also effective against *Mansonioides* sp. R.T.L.

(423d) Three distinct types of microfilariae from the blood of domestic fowls in Ernakulam and Shertallai, Travancore-Cochin State, are illustrated and various measurements are tabulated with those described by Ramanujachari & Alwar (1953) and Kuppaswamy (1936). No adults were found at autopsy and attempts to infect six species of laboratory-bred mosquitoes failed. R.T.L.

(423e) When kept in a mixture of 25% serum and 75% Ringer's solution with 0.2% glucose at 75°F. for about 48 hours eleven female *Conispiculum guindiensis*, from the garden lizard *Calotes versicolor*, produced from 1,350 up to 87,660 microfilariae each. The addition of penicillin to the medium caused immediate cessation of parturition but the worms remained alive and mobile for over 24 hours.

R.T.L.

(423f) Examination of 8,463 persons during a filariasis survey of Shertallai Taluk, Travancore-Cochin State, showed that the endemicity rate was 42.9%, the infection rate 20.9% and the disease rate 23.8%. The youngest person in whom microfilariae were detected was one year old. Elephantiasis of both legs was observed in a boy three years old. The infections were almost entirely due to *Wuchereria malayi*. Only 16 cases of *W. bancrofti* were noted in Shertallai Town, but seven of these had *W. malayi* also. Filarial developing forms were found in 5.03% of *Mansonioides annulifera* and 1.64% of *M. uniformis* dissected. Manual removal of *Pistia* has been in force in some parts of the Taluk for nearly 20 years as a method of control of *W. malayi*.

R.T.L.

424—Indian Journal of Veterinary Science and Animal Husbandry.

- a. VARMA, A. K., 1956.—“Some observations on the morphology and pathogenicity of *Moniezia expansa* (Rudolphi, 1810).” **26** (3), 103–107.
- b. SHARMA, R. M. & BHATIA, H. M., 1956.—“Lumbar paralysis in sheep and goats.” **26** (3), 117–122.
- c. THAPAR, G. S., 1956.—“Systematic survey of helminth parasites of domesticated animals in India.” **26** (4), 211–271.

(424a) The pathogenicity of *Moniezia expansa* is illustrated by the post-mortem findings in a buffalo calf, 10 months old, which showed extreme anaemia and debility. The small intestine was congested throughout and contained two strobilae about 450 cm. in length. The fats were gelatinized, the peritoneal cavity contained about 8 oz. of serous fluid and the gall-bladder about 4 oz. of greenish bile. In the faeces there were numerous *Moniezia* eggs and a few ova of *Trichuris vis*. Camera lucida drawings of eight eggs of *M. expansa* collected from faeces by sugar flotations show that their normal shape is rhomboidal. Individual variations in shape from triangular to spherical were rare, but in stained segments the eggs *in utero* showed no uniformity or constancy in shape or size. This probably accounts for the differences between the observations of earlier authors. The variable arrangement of the testes in *M. expansa*, reported by Taylor, is confirmed and this supports the view that *M. trigonophora* is not a valid species.

R.T.L.

(424b) An obscure disease with staggering gait, incoordination of movement of the hind legs and general dullness has occurred seasonally for some years among all breeds of sheep and of goats at Hissar, India, but it has not been possible to isolate any pathogenic organism or to reproduce the disease in sheep, goats or laboratory animals. So far, the authors' investigations indicate that deficiency of vitamin B₁ plays some part in the aetiology of lumbar paralysis.

R.T.L.

(424c) In a series of tables Thapar brings together new Indian locality records for a large number of helminth parasites of domesticated stock and lists the helminths found in other animals.

R.T.L.

425—*Industria Saccarifera Italiana*.

- a. DONÀ DALLE ROSE, A., 1956.—“L'*Heterodera schachtii* nuovo flagello della bieticoltura italiana?” **49** (3/4), 49–55.

(425a) In recent years *Heterodera schachtii* has been spreading in Italy and is now fairly serious in sugar-beet in limited areas such as those north of the River Po. In soil samples from the Po delta, seven to ten live cysts have been found per 100 gm. The failure to adopt proper rotations favours the nematodes and the use of insecticides which destroy their acarine

predators may do so. As the parasite does not encyst in *Beta patellaris* although the roots are attacked, breeding from this and from the plants occasionally found unattacked in an infested beet population, holds out possibilities of developing a resistant strain. It is suggested that rape and other cruciferous plants can be used as trap crops to reduce infection of the soil. Experiments with nematicides are at present hampered by economic and technical factors but sufficient limitation of *H. schachtii* populations to allow sugar-beet cultivation will constitute some achievement.

M.MCK.

426—Informe Mensual. Estación Experimental Agrícola de "La Molina".

- a. BAZÁN DE SEGURA, C., 1956.—"Creciente importancia de los nematodos en el cultivo del algodón en el Perú." 30 (345), 1-3.
- b. QUEVEDO DÍAZ, A., SIMÓN F., J. E. & TOXOPEUS, H. J., 1956.—"Estudios de resistencia a la 'anguilula dorada' de la papa." 30 (347), 10-15.
- c. SIMÓN F., J. E., 1956.—"Influencia de los factores planta, tierra y clima en el desarrollo de *Heterodera rostochiensis* Wollw. en el Perú. Campaña 1955-56." 30 (348), 13-17.

(426a) The importance of nematodes in the cultivation of cotton in Peru is discussed. The symptoms produced by parasitic nematodes and by nematodes in conjunction with fungi are described. Certain varieties of cotton, especially L.M.W-395-42, are described as being resistant to these pathogens.

H.R.W.

(426b) A study was made of Dutch potato varieties to test their degree of resistance to the potato-root eelworm and their genetical variation under Peruvian conditions. In these preliminary experiments cysts developed on all the potato strains tested.

H.R.W.

(426c) When Simón repeated some of the experiments conducted in 1954-55 on the susceptibility of potato plants to *Heterodera rostochiensis* under the conditions of the mountainous and coastal regions of Peru [for abstract of previous account see Helm. Abs., 24, No. 565a], no new cysts developed in the plants grown in the coastal soil and the conclusions drawn from the previous experiments were confirmed.

M.MCK.

427—Irish Veterinary Journal.

- a. KENNY, J. E. & THORNBERRY, H., 1956.—"The problem of scour and wasting in young stock." 10 (10), 212-216; (11), 223.

(427a) Climatic conditions in Ireland, from autumn 1955 to spring 1956, favoured the spread of helminths in young stock and gave rise to scouring and wasting in the seven-month to two-year-old cattle and a high percentage did not respond to anthelmintic treatment. The predominant species were *Ostertagia ostertagi* and *Trichostrongylus axei*. Phenothiazine failed against the immature forms and heavy infections. The authors conclude with advice on the handling of debilitated and anaemic animals in which anthelmintic treatment is often contra-indicated.

R.T.L.

428—Izvestiya Akademii Nauk Armyanskoi SSR. Biologicheskie i Selskokhozyaistvennie Nauki.

- a. DAVTYAN, E. A. & SHULTS, R. S., 1956.—[Introduction of living cultures of larvae for immunization against lungworms.] 9 (1), 67-73. [In Russian.]
- b. AKHUMYAN, K. S., 1956.—[Parasitic worms of coypu acclimatized in Armenia.] 9 (4), 29-36. [In Russian.]
- c. SVADZHYAN, P. K., 1956.—[Experimental infection of definitive hosts with metacercariae of *Dicrocoelium dendriticum* Stiles & Hassall, 1896 (Trematoda, Dicrocoeliidae).] 9 (7), 89-93. [In Russian.]

(428a) Davtyan & Shults describe experiments on the production of active immunity against lungworms in sheep by injecting live infective larvae into tissues and organs in which development did not normally occur. In the case of *Cystocaulus* only a small number of the 5,000 larvae injected intramuscularly into the extremities or intravenously reached the lungs

and all encysted either at the third moult or as immature adults. The authors suggest that the development was inhibited by the absence of the usual stages of migration and that this method can be used for immunization against *Cystocaulus*. In the case of *Dictyocaulus* this method cannot be used, however, as a very small number of the 35,000 to 150,000 larvae similarly injected did reach maturity. The depression of development was due to the mass infection and quick development of immunity rather than to the absence of normal stages of migration. G.I.P.

(428b) The three helminths found in 70 *Myocastor coypus* examined in Armenia were *Trichocephalus nutria* (in 10), *Fasciola gigantica* (in 2) and an unidentified species of Hymenolepididae (in 38). The last two are reported for the first time from the coypu. A table lists all the helminths known for the coypu and the countries or regions of their occurrence. G.I.P.

(428c) An attempt to infect sheep with *Dicrocoelium dendriticum* cercariae from molluscs was unsuccessful, but 118 mature worms were recovered from the gall-bladder and bile-ducts of a sheep 89 days after it had been fed 1,000 ants (*Formica rufibarbis*, *F. fusca* and *Proformica nasuta*) 3.7% of which were naturally infected with 6 to 85 metacercariae. The infection was also successful in two rabbits which had been given infected *F. rufibarbis* and in a third rabbit which had received 250 encysted metacercariae obtained from the ants. In the laboratory, the encysted metacercariae were killed within two hours in N/10 hydrochloric acid plus 1% pepsin, but in 50 gm. of 1% pancreatic fluid plus ten drops of sheep bile, active metacercariae excysted within 12 hours at 37°C. G.I.P.

429—Izvestiya Akademii Nauk Azerbaidzhanskoi SSR.

- a. SHIPINOVA, S. I., 1956.—[Dimethyl-dithiocarbamic acid preparations in the control of root-knot nematode.] Year 1956, No. 11, pp. 127–136. [In Russian.]

(429a) The soil before planting was treated for root-knot nematode with 150 gm. per sq.m. of one of two preparations of dimethyl-dithiocarbamic acid containing 10% and 20% of active principle respectively. Only 2.1% of tomato plants on plots treated with the first preparation were infected as compared with 37.2% on untreated plots, the tomato yield being five times higher, and only 15% of potato plants were infected on plots treated with the second preparation as compared with 100% on untreated plots, the potato crop being doubled. G.I.P.

430—Japanese Journal of Ecology.

- a. ICHINOHE, M. & YUHARA, I., 1956.—[Oecology of the root-knot nematode in the northern part of Hokkaido.] 6 (1), 24–28. [In Japanese: English summary pp. 24–25.]

(430a) In a survey of the northern part of Hokkaido, *Meloidogyne hapla* was found on 46 species of wild plants in 19 families from 13 localities. Sixteen species are new host records: 12 cultivated plants were infested. No other species of *Meloidogyne* was found. Fourteen species growing in infested ground, including 11 grasses were free from galls. The size of gall appears to be characteristic of the host. M.T.F.

431—Japanese Journal of Medical Science and Biology.

- a. RITCHIE, L. S., HUNTER, III, G. W., FREYTAG, R. E., PAN, C., YOKOGAWA, M. & LIN, S. S., 1956.—“Parasitological studies in the Far East. XII. An epidemiologic survey in Shizuoka Prefecture, Honshu, Japan.” 9 (4/5), 165–177.
- b. ITO, J., 1956.—“Studies on the brackish water cercariae in Japan. I. Two new furcocercous cercariae, *Cercaria ogatai* n.sp., and *Cercaria tympanotoni* n.sp. in Tokyo Bay (Trematoda).” 9 (4/5), 223–234.
- c. ITO, J., 1956.—“Studies on the brackish water cercariae in Japan. II. Two new long-tailed cercariae, *Cercaria komiyai* n.sp. and *Cercaria nigrocaudata* n.sp. in Tokyo Bay (Trematoda).” 9 (4/5), 235–242.
- d. KOMIYA, Y., YASURAOKA, K. & SATO, A., 1956.—“Survival of *Ancylostoma caninum* in vitro. (I).” 9 (6), 283–292.

(431a) Single faecal samples of 2,278 people in 22 communities in Shizuoka Prefecture, Japan, and swab samples of 427 children showed helminths in 91.8%. Hookworm was present

in 27.4%, most of these infections being inconsiderable. The incidence of *Schistosoma japonicum* eggs exceeded 5% in one village only, but skin tests on 470 people indicated that a large proportion had been infected. Search revealed only two foci of *Oncomelania nosophora* and the 594 snails collected were uninfected. Schistosomiasis appears to have decreased as a result of swamp reclamation. The schistosome-endemic area extended westward from Numazu city, apparently terminating in the vicinity of Sudo and Motoyoshiwara several miles short of Yoshiwara. Ishii made reference in 1946 to filarial infection in the Yoshiwara area but concentrations of blood samples from 350 people there were negative. Along the Kano river east of Numazu 12.5% and 16.3% were found with *Paragonimus westermanii*. M.MCK.

(431b) *Cercaria ogatai* n.sp., of the *vivax* group, is described in detail and illustrated from *Cerithidea* (*Cerithideopsisilla*) *cingulata* and *Tympanotonus microptera* collected on a muddy sea-shore at Urayasu, Chiba Prefecture, Japan. It resembles *Cercaria leptoderma* and the cercariae of *Paracoenogonimus ovatus* and *Linstowiella szidati* from which it is said to differ in structure, measurements, hosts and localities. Ito gives a list of the 19 known species of *vivax* cercariae, with their synonyms, locality, flame-cell formula and host genera. *C. tympanotoni* n.sp., a rare cercaria from *T. microptera* from Urayasu, is only briefly described because of lack of material. It is an apharyngeal brevifurcate distome cercaria and apparently belongs to group I of Sewell. Its eye-spots and the absence of a fin-fold on the furcal rami suggest that it is perhaps one of Sewell's *spindalis* or *douthitti* group and able to produce dermatitis. M.MCK.

(431c) *Cercaria komiyai* n.sp. from *Tympanotonus microptera* from the muddy sea-shore of Urayasu, Chiba Prefecture, Japan, has a tail approximately 2 mm. long and about six times the length of the body. The tail is filled in the posterior third with blackish granules which space out in the middle third into five to eight large masses of progressively diminishing size. A preliminary description of *C. nigrocaudata* n.sp., a rare cercaria from *Cerithidea* (*Cerithidea*) *largillierii* from the same locality, records that the tail is 820 to 1,070 μ long or about four times the body length and is compactly filled in the anterior three-quarters with blackish granules. Both species are said to differ from *Cercaria longicrura* and *C. tapidis* in structure, hosts etc. M.MCK.

(431d) These are the first records of the survival of *Ancylostoma caninum* in vitro. In serum from a dog free of hookworm, diluted to 75% with Krebs-Ringer's bicarbonate solution and kept at 37°C., males survived up to six weeks and females up to 12 weeks. Copulation took place often during the first three weeks. Eggs were found up to the 82nd day and hatched larvae up to the 30th day and again after a gap of about two weeks. The use of serum whole, or diluted as above to 75% or 50%, or the addition of blood cells to the medium, did not much affect survival and reproduction. In Krebs-Ringer's bicarbonate solution at 28°C. survival times were increased if glucose was added. The maximum survival, observed at a glucose concentration of 0.5%, was 21.5 days in the female and 10.5 days in the male. Ringer's, Locke's and Tyrode's solutions and Krebs-Ringer's phosphate solution were less efficient media. M.MCK.

432—Japanese Journal of Veterinary Research.

- a. YAMASHITA, J., 1956.—“Studies on echinococcosis. II. Echinococcosis in Japan.” 4 (2), 64-74.
- b. NAKAMURA, R., MATSUHASHI, A., YAMASHITA, N. & YAMAMOTO, T., 1956.—“Studies on ‘kassen’ of horses in Hokkaido. III. Research on the actual state of the disease.” 4 (3), 81-88.
- c. YAMASHITA, J., OHBAYASHI, M. & KONNO, S., 1956.—“Studies on echinococcosis. III. On experimental infection in dogs, especially on the development of *Echinococcus granulosus* (Batsch, 1786).” 4 (3), 113-122.
- d. YAMASHITA, J., OHBAYASHI, M. & KONNO, S., 1956.—“Studies on echinococcosis. IV. Experimental infection of the white mouse.” 4 (4), 123-128.

(432a) Up to the present about 70 human cases of hydatid infection have been found in different parts of Japan. Of these, two in Sendai, one in Niigata, one in Naoetsu, one in

Hirosaki and 25 on Rebun Island had cysts alveolar in type, while in the rest the cysts were unilocular. Yamashita states that he and his co-workers have shown that white mice acquired hydatid cysts in the lung and liver when fed with the eggs in faeces of a dog artificially infected with scolices of the sheep strain from Australia.

R.T.L.

(432b) *Onchocerca cervicalis* has been thought for many years to cause "kasen" disease in horses. From their observations Nakamura and his co-workers conclude that this filariid is not responsible and that the disease is related to an allergic reaction.

S.W.

(432c) From a study of specimens of *Echinococcus granulosus* obtained by feeding dogs with hydatid cysts from Australian sheep data were obtained, and are tabulated, indicating that there are variations in size and shape of the various organs not only at the same stage after infection but also with the growth of the tapeworm. Further experimental work is therefore needed to provide effective data for the differentiation of the various species of *Echinococcus*.

R.T.L.

(432d) Unilocular cysts developed in the liver, peritoneum and pleural cavity of mice which had received, by the mouth, eggs taken from proglottides of *Echinococcus granulosus* collected from a dog experimentally fed with hydatids from an Australian sheep. The walls of the cysts were characteristically hydatid but no scolices were found and the liver showed no sign of histological reaction.

R.T.L.

433—Japanese Journal of Veterinary Science.

- a. NISHIYAMA, S., WATANABE, S., TASHIRO, T. & MORIZONO, M., 1956.—[Experiments on the artificial infection of cutaneous habronemiasis with experimentally isolated larvae of *Habronema muscae* or *Habronema microstoma*.] 18 (3), 71-78. [In Japanese: English summary pp. 77-78.]
- b. ICHIHARA, T., SUSUMI, S. & KURAMOTO, T., 1956.—[Studies on the diagnosis of fascioliasis. I. Antigens for the precipitation test.] 18 (4), 119-129. [In Japanese: English summary pp. 128-129.]
- c. ICHIHARA, T., SUSUMI, S. & KURAMOTO, T., 1956.—[Studies on the diagnosis of fascioliasis. II. The precipitation test for fascioliasis in cattle.] 18 (4), 131-135. [In Japanese: English summary p. 135.]
- d. ICHIHARA, T., SUSUMI, S. & KURAMOTO, T., 1956.—[Studies on the diagnosis of fascioliasis. III. Precipitation test for fascioliasis in goats.] 18 (4), 137-140. [In Japanese: English summary p. 140.]
- e. ONO, M. & WATANABE, S., 1956.—[Studies on the polysaccharides in the antigen of skin test for bovine fascioliasis.] 18 (4), 141-148. [In Japanese: English summary p. 148.]

(433a) When isolated larvae of *Habronema muscae* and *H. microstoma* were applied to areas on the skin of the anterior fetlock and just beneath the eye, which had been only shaved and moistened with physiological saline solution, both species entered the pores of the skin causing inflammatory changes, reproducing the clinical and histological features of naturally acquired cutaneous habronemiasis.

R.T.L.

(433b) The authors prepared five antigens from adult *Fasciola hepatica* for use in precipitation tests. These were: (i) purified polysaccharide, (ii) methanol-soluble lipid, (iii) methanol-soluble lipid from which the precipitates formed when kept for two days at low temperatures were removed, (iv) ethanol-soluble lipid and (v) ethanol-soluble lipid treated as (iii) above. When used individually all were unsatisfactory, (iii) giving the weakest reaction amongst the lipid fractions. When the polysaccharide and lipid fractions were mixed, however, excellent results were obtained. Antigen from *Paramphistomum cervi*, prepared in the same way and compared with the *F. hepatica* antigen showed "no alliance in reaction".

S.W.

(433c) Using the mixed polysaccharide and lipid *Fasciola hepatica* antigen which they described in an earlier paper [see preceding abstract], Ichihara *et al.* found the precipitation test for the diagnosis of fascioliasis in cattle to be specific and to have an accuracy of 90%. Although the test was almost always positive, even in animals only slightly infected, there was no clear correlation between the degree of infestation and intensity of precipitation.

S.W.

(433d) Ichihara *et al.* using the antigen and precipitation test previously described [see the two preceding abstracts] have shown that fascioliasis in goat can also be diagnosed by this method. S.W.

(433e) Ono & Watanabe have investigated the so-called "glycogen fraction" from *Fasciola hepatica*, which contains the active principle for intradermal tests. They conclude that the active substance is polysaccharide without glycogen but including fructose. S.W.

434—Journal of the Agricultural Society of Trinidad and Tobago.

- a. FENWICK, D. W., 1956.—"Preliminary investigations into red ring disease of coconuts." 66, 253, 255, 257, 259, 261, 263, 265, 267–276.

(434a) Fenwick, in a talk to the Agricultural Society of Trinidad and Tobago, described his work on *Aphelenchoides cocophilus* causing red ring disease of coconuts. He doubted whether the coconut weevil *Rhynchona palmarum* was an important vector of the disease but stressed that it was a major pest in its own right. His work suggested that infection started in the base of the tree and that entry into the base was via the roots. This, together with the fact that red ring seemed to be more prevalent on badly drained areas suggested that the disease was soil borne. The presence of soil nematodes in the husks of dropped seed nuts (and the finding of red ring worms in two nuts) suggested that the disease could be spread to new areas by the use of infested nuts. D.W.F.

435—Journal of Agriculture of Western Australia.

- a. SHILKIN, J., 1956.—"Internal parasites of the horse." 3rd series, 5 (4), 393–394, 397–398, 401–402, 405–406.
b. TOOP, C. R., 1956.—"The cystic tapeworms (bladder-worms) of sheep." 3rd series, 5 (6), 755–759.

(435a) Shilkin, in popular language, summarizes the naked eye recognition, symptoms, treatment and prevention of the helminths of the horse which are considered to be of importance in Western Australia. These are *Strongylus* spp., *Trichonema* spp., *Habronema* spp., *Parascaris equorum*, *Oxyuris equi* and two species of tapeworm. *Trichostrongylus axei* has not been reported for this State. R.T.L.

436—Journal of the American Society of Sugar Beet Technologists.

- a. THORNE, G., 1956.—"Effects of sugar beet root diffusates and extracts, and other substances, on the hatching of eggs from the cysts of the sugar beet nematode, *Heterodera schachtii* Schmidt." 9, 139–145.
b. SCHUSTER, M. L. & THORNE, G., 1956.—"Distribution, relation to weeds, and histology of sugar beet root galls caused by *Nacobbus batatiformis* Thorne and Schuster." 9 193–197.

(436a) Thorne describes experiments on stimulation of hatching of *Heterodera schachtii*. He claims that conditions of hatching were more nearly natural with his techniques than with those of other workers. Substances tested as possible hatching agents were (i) young sugar-beet plants (placed directly in the hatching tube), (ii) extract from crushed roots of young sugar-beet plants, and dilutions of (iii) indol-3-acetic acid, (iv) vitamin B₁ and (v) theelin. He concludes that (i) stimulated hatch, (ii) and (iii) suppressed it, while (v) had little, if any, effect. Another test showed that hatching occurred more readily in March, April and May than in January; from this Thorne concludes that maturity of the cysts had a decided influence on larval emergence. R.D.W.

(436b) *Nacobbus batatiformis* was found in 32% of sugar-beet fields sampled in western Nebraska, in sandy soils north of the North Platte river but not in the silt soils south of the river. It reduces the stand and vigour of sugar-beet. It occurs on three native cacti and on *Chenopodium album* and *Kochia scoparia* and is considered to be native to the region. It is probably spread in irrigation water. A histological description is given of the galls formed in infested sugar-beet. M.T.F.

437—Journal of Animal Science.

- a. RIEDEL, B. B. & ARNOLD, J. L., 1956.—“The effect of pasture crops with and without supplemental corn feeding and dry-lot management for beef production and nematode control.” **15** (2), 537–542.
- b. VEGORS, H. H., BAIRD, D. M., SELL, O. E. & STEWART, T. B., 1956.—“Parasitism in beef yearlings as related to forage availability and levels of protein feeding.” **15** (4), 1199–1206.
- c. EMERICK, R. J., BEMRICK, W. J., POPE, A. L., HERRICK, C. A. & PHILLIPS, P. H., 1956.—“Mineral vs. phenothiazine supplementation in the control of stomach worms in grazing sheep.” [Abstract of paper presented at 48th Annual Meeting of the American Society of Animal Production, Chicago, November 23–24, 1956.] **15** (4), 1266.
- d. SMITH, W. N., VEGORS, H. H., SELL, O. E. & BAIRD, D. M., 1956.—“The effects of pastures and environmental conditions on numbers of infective roundworm larvae available to grazing cattle.” [Abstract of paper presented at 48th Annual Meeting of the American Society of Animal Production, Chicago, November 23–24, 1956.] **15** (4), 1276.
- e. GUTHRIE, J. E. & BRIGGS, J. E., 1956.—“Ascarioid activity of piperazine administered in the feed to swine.” [Abstract of paper presented at 48th Annual Meeting of the American Society of Animal Production, Chicago, November 23–24, 1956.] **15** (4), 1297.

(437a) From a study of the effect of dry-lot management and of pasture crops, with and without supplemental corn feeding, on the nematode potential and weight gain of steers Riedel & Arnold concluded that fescue-ladino pasture grazing yielded a low beef production, which was significantly increased by a partial corn supplement, and a high nematode potential which this supplement did not change; but the same amount of corn supplement to ryegrass lowered the shed of nematode eggs without significantly augmenting beef production. Wheat pasture grazing was as effective in beef production as a full feed of corn and cotton-seed meal (in the proportion 7:1) with the addition either of 3 lb. of legume hay in dry-lot or ryegrass pasture with corn supplement.

R.T.L.

(437b) Experiments designed to determine how far forage availability and level of protein feeding may affect internal parasitism of yearling beef cattle are described. Although there appeared to be an inverse correlation between the average daily gains in weight and the average parasite loads on the different treatments and protein levels the results were not considered to be conclusive.

R.T.L.

(437c) Experiments, briefly reported, have shown that the addition of dicalcium phosphate to trace-mineralized salt was comparable to the phenothiazine trace-mineralized mixture in protecting lambs from the detrimental effect of *Haemonchus contortus* infection.

R.T.L.

(437d) From a study of the effects of the type of winter pasture, low level phenothiazine and seasonal climatic factors on the number of infective larvae available to grazing cattle and on their weight, it was found that with phenothiazine feeding the average number of larvae recovered from grass clippings was 23 per lb. from temporary pasture and 12 per lb. from permanent pastures, whereas without phenothiazine feeding the numbers were 34 and 129 larvae per lb. of green forage respectively. The phenothiazine has little or no effect in reducing the larvae on temporary pasture and ryegrass and is most effective on crimson clover and fescue as permanent pastures. From winter to spring there was a rapid increase in the number of larvae in the first year but this was less marked in the following year owing to the prolonged cool weather.

R.T.L.

(437e) Statistical data on the anthelmintic activity of piperazine sulphate and piperazine phosphate against *Ascaris lumbricoides* when given to pigs in a balanced ration for 24 hours are presented.

R.T.L.

438—Journal of the Australian Institute of Agricultural Science.

- a. SEINHORST, J. W. & SAUER, M. R., 1956.—“Eelworm attacks on vines in the Murray Valley irrigation area.” **22** (4), 296–299.

(438a) The chief symptom of eelworm attack on vines is a “slow decline”. *Meloidogyne javanica* causes galls of various sizes on roots of different vine varieties. *Pratylenchus vulnus*

causes severe cortical lesions on the roots which may greatly reduce the root system. *P. scribneri* causes minute root lesions and there may be considerable root proliferation. *Tylenchulus semi-penetrans* also causes root proliferation and sometimes extensive bark necrosis. J.B.G.

439—Journal of the Bombay Natural History Society.

- a. TIMM, R. W., 1956.—“Marine nematodes from the Bay of Bengal. I. Phasmidea.” 54 (1), 87–90.

(439a) *Rhabditis (Choriorhabditis) marina* var. *bengalensis* n.var. is based on a single specimen, from Sonadia Island, East Pakistan. The three pre-anal papillae are equally distributed whereas in the typical form of *R. marina* the first pair is in line with the head of the spicules and the second and third pairs are close together just anterior to the anus. Hundreds of *Halicephalobus limuli* n.g., n.sp. were present on the leg bases of king crabs in a fresh-water stream in the Bay of Bengal, East Pakistan. It is type and only species of *Halicephalobus* which differs from all other genera of Panagrolaiminae, except *Tricephalobus*, in the double flexure of the ovary and from *Tricephalobus* in having a median oesophageal bulb. *Tylenchus marinus* n.sp. from a mud flat, at low tide on Sonadia Island, Bay of Bengal, East Pakistan, is based on a female specimen 610 μ long with an uncinat tip to the tail and is placed in *Tylenchus* provisionally.

R.T.L.

440—Journal of the British Grassland Society.

- a. HIGNETT, P. G., 1956.—“Some diseases associated particularly with the grazing animal.” 11 (3), 194–198.

(440a) The idea that reseeded herbage following the ploughing up and cropping of old wormy pastures would be free from infective helminth larvae has proved largely fallacious. Although the infectivity of the reseeded pasture is initially low, the build up of larvae can be extremely rapid and their number per unit weight of herbage is likely to be higher than on old permanent pasture. The residual worm burden of the pastures is of minor importance and can be greatly reduced by leaving it unstocked for four to six weeks. Strip grazing for not more than four days with intervals of a month to six weeks, removal of the stock before the pasture is grazed short or grazing with horses or other non-susceptible animals is recommended. Well nourished or adult stock tolerate a higher intake of larvae than young or ill nourished animals.

R.T.L.

441—Journal of the Colorado-Wyoming Academy of Science.

- a. BURNETT, M. P., 1956.—“A preliminary report on the helminth parasites from muskrats collected in the vicinity of Fort Collins, Colorado.” [Abstract of paper presented at the 27th Annual Meeting of the Colorado-Wyoming Academy of Science, 1956.] 4 (8), 45.
b. McCREAE, R. C., 1956.—“Helminth parasites of cottontail rabbits from a dry foothills habitat in northern Colorado.” [Abstract of paper presented at the 27th Annual Meeting of the Colorado-Wyoming Academy of Science, 1956.] 4 (8), 46.
c. HAGEN, A. F., 1956.—“Species and incidence of parasites in the blood of the American magpie in northern Colorado.” [Abstract of paper presented at the 27th Annual Meeting of the Colorado-Wyoming Academy of Science, 1956.] 4 (8), 47.

(441a) Burnett tabulates from autopsies on 99 musk-rats collected around Fort Collins, Colorado, the incidence of infection and the relative abundance of *Notocotylus filamentus*, *Quinqueserialis quinqueserialis*, *Echinoparyphium contiguum*, *Echinostoma revolutum*, *Plagiorchis proximus*, *Capillaria michiganensis*, immature ascarids, *Cysticercus fasciolaris* and hymenolepid-like strobila.

R.T.L.

(441b) The incidence of infection and the relative abundance of the helminths found in 75 cotton-tail rabbits from the area around Antelope Refuge of Northern Colorado are tabulated. *Multiceps* sp. and *Passalurus nonanulatus* are new records for *Sylvilagus auduboni* and a species of *Railletina* is believed to be new [but is not described].

R.T.L.

(441c) Except for a microfilaria the blood parasites found in 200 American magpies in Northern Colorado were protozoa.

R.T.L.

442—Journal of Comparative Pathology and Therapeutics.

- a. MICHEL, J. F., 1956.—“Studies on host resistance to *Dictyocaulus* infection. III. Experiments on the site of the protection mechanism.” 66 (4), 338–344.

(442a) It is known that the larvae of *Dictyocaulus filaria* after penetrating into the lymphatics of the intestinal wall of sheep traverse the mesenteric glands and enter the blood stream with the lymph to be filtered out in the lung capillaries. Michel has now investigated in experimentally infected mice and rabbits the reason why the larvae fail to reach the lungs in previously infected animals, and tentatively concludes from his experiments that in the resistant host the larvae are destroyed or lost in the mesenteric glands or in the lymphatics.

R.T.L.

443—Journal of the Egyptian Endocrine Society.

- a. GHALIOUNGUI, P., NAGATY, H. F., EL-SHAWARBY, K., RIFAAT, M. A. & SADEK, M. A., 1956.—“A survey of goitre and of parasitic and nutritional diseases in Upper Sudan.” 2 (3), [reprint 32 pp.].

(443a) Ayad's report that *Schistosoma haematobium* and *S. mansoni* infections are unknown, between latitudes 12°N and 8°N, in the Upper Nile Province is confirmed. Although an incidence of 2.5% of urinary and of 1.9% of intestinal infections was given in the Annual Report of the Sudan Medical Service for 1949, these records were based on hospital and dispensary routine examinations and the areas in which the infections were contracted were not noted. Nevertheless, as Ayad in 1956 found *Bulinus* and *Biomphalaria* near Malakal and in channels of the Jonglei Agricultural Scheme, south of Malakal, these infections are likely to appear in this area before long.

R.T.L.

444—Journal of the Fisheries Research Board of Canada.

- a. SCOTT, D. M., 1956.—“On the specific identity of the larval *Porrocaecum* (Nematoda) in Atlantic cod.” 13 (3), 343–356.
b. MARGOLIS, L., 1956.—“Parasitic helminths and arthropods from Pinnipedia of the Canadian Pacific Coast.” 13 (4), 489–505.

(444a) The frequency distributions of body measurements of several hundred larval *Porrocaecum* from the cod, *Gadus callarias*, from the Canadian Atlantic suggested that only one species was present. The body proportions of the larvae agreed more closely with those of adult *P. decipiens* than with those of ten other species of adult *Porrocaecum* from marine animals. In the Canadian Atlantic *P. decipiens* is the only known species of this genus and the distribution of the seals, which are important definitive hosts, agrees closely with that of infected cod. It is also known that larvae of *Porrocaecum* from *G. callarias* develop into adult *P. decipiens*. Scott therefore concludes that the larvae found in *G. callarias* were *P. decipiens*. The species of *Porrocaecum* and the predatory marine animals in which they have been found are listed. Some of the body measurements of 20 species of adult *Porrocaecum* are tabulated with their hosts.

M.MCK.

(444b) *Corynosoma strumosum*, *Terranova decipiens* and *Contracaecum osculatum* were found when 14 specimens of *Phoca vitulina richardi* were examined from the Canadian Pacific. In 17 *Eumetopias jubata* from the Canadian Pacific and in *E. jubata* material, from collections in McGill University, were found *Diphyllbothrium pacificum* n.comb., *Diplogonoporus tetrapterus*, *Abothrium gadi* (this was probably acquired because the host had eaten infected fish of the family Gadidae), *T. decipiens*, *C. osculatum*, *Paraflaroides* sp. (spp.?) and *Corynosoma villosum*. *Diphyllbothrium pacificum*, formerly *Adenocephalus pacificus*, is not thought to be a synonym of *Clestobothrium glaciale* as suggested by Markowski, 1952, who made the combination *D. glaciale*. In *C. glaciale* the cirro-vaginal opening was reported to be on the dorsal

surface and the uterine pore on the ventral surface, whereas in *D. pacificum* both pores open on the ventral surface. *E. jubata* constitutes a new host for *D. pacificum* and *Diplogonoporus tetraapterus*. *Contracaecum callotariae* Yamaguti, 1951 is considered a synonym of *C. osculatum*.

M.MCK.

445—Journal of the Japanese Veterinary Medical Association.

- a. SUGANUMA, Y. ET AL., 1956.—[Studies on the functions of the liver in heart filariasis in dogs.] 9 (5), 215-218. [In Japanese.]
- b. OHISHI, I. ET AL., 1956.—[Treatment experiments of filariasis. I. Reaction of dogs against the injection of hydrochloride of dichlorophenarsin.] 9 (6), 267-271. [In Japanese.]
- c. SUSUMU, S. ET AL., 1956.—[Significance of egg test in the diagnosis of fascioliasis.] 9 (9), 411-414. [In Japanese.]
- d. ONO, M. ET AL., 1956.—[Studies on freeze-dried antigen for the intradermal reaction of *Fasciola hepatica*.] 9 (9), 415-417. [In Japanese.]
- e. OISHI, I. ET AL., 1956.—[Experimental treatment of filariasis. Reaction of dogs to the injection of hydrochloride of difluorophenarsin.] 9 (9), 422-426. [In Japanese.]
- f. ISODA, M. ET AL., 1956.—[Collective infestation of *Metastrongylus elongatus* among piglets.] 9 (10), 471-474. [In Japanese.]
- g. OISHI, I. ET AL., 1956.—[Effects of antimony and sulfa drugs simultaneously administered against canine microfilaria.] 9 (11), 518-521. [In Japanese.]

446—Journal of Parasitology.

- a. HENDRICKS, J. R. & CORT, W. W., 1956.—“A study of the *in vitro* actions of antisera on the cercariae of certain bird schistosomes.” 42 (6), 557-564.
- b. PELLEGRINO, J. & BRENER, Z., 1956.—“Method for isolating schistosome granulomas from mouse liver.” 42 (6), 564.
- c. STIREWALT, M. A. & HACKEY, J. R., 1956.—“Penetration of host skin by cercariae of *Schistosoma mansoni*. I. Observed entry into skin of mouse, hamster, rat, monkey and man.” 42 (6), 565-580.
- d. COIL, W. H., 1956.—“Two new hymenolepidid cestodes from Mexican birds with observations on *Hymenolepis crocethiae* Webster, 1947.” 42 (6), 584-587.
- e. KELLEY, Jr., G. W. & SMITH, L. J., 1956.—“The daily egg production of *Ascaris suum* and the inability of low levels of aureomycin to affect egg production and embryonation.” 42 (6), 587.
- f. SADUN, E. H. & NORMAN, L., 1956.—“Effect of single inocula, of varied size, on the resistance of hamsters to *Trichinella spiralis*.” 42 (6), 608-612.
- g. KUNTZ, R. E. & CHANDLER, A. C., 1956.—“Studies on Egyptian trematodes with special reference to the heterophyids of mammals. II. Embryonic development of *Heterophyes aequalis* Looss.” 42 (6), 613-625.
- h. DOUVRES, F. W., 1956.—“Morphogenesis of the parasitic stages of *Ostertagia ostertagi*, a nematode parasite in cattle.” 42 (6), 626-635.
- i. SCHWABE, C. W., MEIER, H. & BENT, C. F., 1956.—“A case of dracontiasis in a New England dog.” 42 (6), 651.
- j. ALICATA, J. E., 1956.—“Observations on the possibility of developing a strain of *Trichinella spiralis* resistant to radiation.” 42 (6), 656-657.
- k. DUNAGAN, T. T., 1956.—“*Hymenolepis spenomorphus* from *Sorex cinereus* in Alaska.” 42 (6), 657-658.
- l. LEVINE, N. D. & CLARK, D. T., 1956.—“Correction factors for fecal consistency in making nematode egg counts of sheep feces.” 42 (6), 658-659.
- m. THOMAS, L. J. & BABERO, B. B., 1956.—“Observations on the infectivity of *Echinococcus* eggs obtained from foxes (*Alopex lagopus* Linn.) on St. Lawrence Island, Alaska.” 42 (6), 659.

(446a) Serum from rabbits and ducklings repeatedly exposed to the cercariae of *Trichobilharzia elvae*, *T. physellae* and *T. stagnicolae* cause the cercariae *in vitro* to agglutinate and a pericercarial envelope to form. These two phenomena arise from different reacting principles. In strong antiserum the envelope originates in the fine extra-cuticular material present in the cercariae while in very weak antisera there is a profuse oral secretion which becomes dispersed in the surrounding medium and apparently causes the agglutination of the cercariae. R.T.L.

(446b) A rapid and easy method for isolating and counting schistosome granulomata from the liver of mice experimentally infected with *Schistosoma mansoni*, in connection with the screening of drugs, is as follows: the liver is removed and washed in tap water, cut into

small pieces, suspended in 150 ml. of saline and homogenized in a Waring blender for three minutes. The material is then poured into cylindrical glasses to allow the granulomata to sediment. The granulomata are repeatedly washed by sedimentation, then stored in 10% formalin for counting in petri dishes. Only the fully developed granulomata which appear eight weeks after infection are isolated.

R.T.L.

(446c) In a detailed study it was found that the mode of entry and pattern of migration of *Schistosoma mansoni* into the unshaven skin of mice, rats, golden hamsters, Macaque monkeys and human beings were essentially similar. Penetration involved orientation of the cercariae to the entry site, close oral attachment, great muscular activity and copious glandular secretion. No specific chemotactic factor was identified but when applied in groups several cercariae concentrated on one entry area and a greater proportion entered within a shorter time. Cercariae were also observed to enter excised skin and even to return to the surface, especially if entry had begun under a skin scale or a mass of sebum. In migration the corneal-Malpighian juncture was a favourite route of migration and the migration tunnel was formed by constant oral exploration combined with muscular action and secretory activity of the acetabular glands.

R.T.L.

(446d) *Hymenolepis chiapaensis* n.sp. from the acorn woodpecker, *Melanerpes formicivorus*, in Mexico, is like *H. anceps*, *H. sacciperium*, *H. mergi* and *H. kaiseris* but differs in shape and in the size of the rostellar hooks which in *H. chiapaensis* are 0.051-0.059 mm. long. *H. collariella* n.sp. from the collared plover, *Charadrius collaris*, in Mexico, has eight rostellar hooks whereas in *H. hamasigi* these are longer and more in number. A small number of cestodes collected from a sanderling, *Crocethia alba*, are identified as *H. crocethiae* although they differ from the type material in the genital ducts.

R.T.L.

(446e) The average number of *Ascaris suum* eggs per worm passed daily, during a 15-day period, in the faeces of two pigs receiving food containing aureomycin at the rate of 10 mg. per lb. was estimated, by the direct Stoll dilution method, to be 1,600,000. The average daily output of a third pig which did not receive aureomycin and lost its infection on the 9th day, was 1,000,000 eggs. Almost all the eggs became embryonated after incubation for 16 days. The aureomycin evidently failed to inhibit embryonation as well as egg production.

R.T.L.

(446f) Hamsters proved susceptible to experimental infection with *Trichinella spiralis*. The LD₅₀ was about 850 larvae. Death occurred with regularity during the intestinal phase when 4,000 or more larvae were used and during the muscular phase when 3,000 or less larvae were used. The elimination of worms from the gut was greatest during the first week after administering the larvae.

R.T.L.

(446g) The development of the rediae and cercariae of *Heterophyes aequalis* in naturally infected *Pirenella conica* from Lake Burullus has been followed in detail. The occurrence of two separate and well defined sites in a few of the mother rediae suggests that there may be two different types of germinal cells. Prominent glandular cells were observed in young daughter rediae. The cercaria is biocellate and pleurolophocercous. There are seven pairs of penetration glands but the amount of pigment present makes the study of the excretory system difficult. Naturally infected cats were collected at El Burg and kittens were experimentally infected by feeding with metacercariae from the muscles of infected laboratory-reared *Gambusia affinis*.

R.T.L.

(446h) *Ostertagia ostertagi* undergoes three ecdyses within the bovine host. The morphological characteristics of the larva at the third and fourth stages and the fifth stage or young adult, are defined and figured and their measurements are tabulated. The fifth stage, now described for the first time, has a cuticularized peribuccal structure of indented hexagonal shape *en face*. Mature worms were obtained from a calf killed 21 days after experimental infection.

R.T.L.

(446i) Fragments of two female *Dracunculus* sp. were removed from a dog which had been kennelled in Dunstable, Massachusetts, and had not been away from the vicinity during its lifetime. This is the second record of the occurrence of this parasite in New England. Previous reports of *Dracunculus* in dogs and in other mammals in the U.S.A. are cited. R.T.L.

(446j) Alicata has tabulated the percentage of sterility among adult female *Trichinella spiralis* in six generations following irradiation of the larval stage in each generation with 5,000 r. The data indicated that no resistant strain developed and that the ability or failure of individual egg cells to develop probably depends on the amount of radiation received. R.T.L.

(446k) In specimens of *Hymenolepis spenophorus* from *Sorex cinereus*, in Alaska, the mature gravid segments and eggs showed sizeable variation. In most the cirrus had disappeared by the time the egg sacs, which contained from 30 to 90 eggs each, had become detached. The ovoid egg, $55\mu \times 41\mu$, contained three cell membranes. The hooklets of the embryo are figured. Each measured 9μ – 10.5μ in length and had a prominent guard, but no terminal knob was visible in a lateral view. R.T.L.

(446l) Faecal samples taken from the rectum of sheep grazing on a lucerne-rye pasture, although apparently of the same consistency, gave wide variations in dry weight. Statistical analysis showed that the best correction factor to apply to the egg count, both for soft-formed and soft pelleted faeces was 1.5. Without this factor the range of variation in these studies would have been 3.4-fold instead of two-fold. R.T.L.

(446m) The eggs of *Echinococcus alveolaris* remain viable for prolonged periods of sub-freezing Arctic temperatures. After storage for two-and-a-half years at 2°C . in tap-water they were infective to ground and tree squirrels. Very old dehydrated fox faeces collected from the tundra and stored at room temperature for over two years contained eggs infective to voles. R.T.L.

447—Journal of Pathology and Bacteriology.

- a. HOU, P. C., 1956.—“The relationship between primary carcinoma of the liver and infestation with *Clonorchis sinensis*.” 72 (1), 239–246.

(447a) In 30 out of 200 cases of primary carcinoma of the liver seen in Hong Kong, *Clonorchis sinensis* was the causal agent. The cancer was primarily and mainly adenocarcinomatous and was confined to the bile-ducts of the second order. The mechanical irritation by the worms provoked persistent hyperplasia and desquamation of the epithelial cells which finally led to malignancy. Sometimes there was a tendency to squamous metaplasia and extensive mucinogen infiltration of the stroma. R.T.L.

448—Journal of Pediatrics.

- a. SADUN, E. H., MELVIN, D. M., BROOKE, M. M. & CARTER, C. H., 1956.—“A new quantitative approach to the study of anthelmintic drugs, with an evaluation of piperazine hexahydrate, phthalylsulphathiazole, and RO 2-5655/3 in the treatment of *Enterobius* infection.” 48 (6), 754–762.

(448a) As the number of *Enterobius* eggs found in cellulose tape preparations has little relationship to the number of worms actually present, six consecutive daily specimens were examined to determine the prevalence and intensity of infection in inmates of a mental institution in Florida and the same procedure was followed after the administration of three drugs tested for their relative anthelmintic potency. When 20 individuals received 2 gm. of piperazine hexahydrate daily for 7 days 65% became negative. After higher doses (not specified) for 14 days, 25 individuals all became negative. With a seven-day course of 8 gm. of phthalylsulphathiazole daily only 4% of 24 infected persons became negative but 96% of 25 individuals were negative after heavier daily doses were given for 14 consecutive days. With RO 2-5655/3

37% of 33 individuals became negative after 2 gm. daily for seven days and 48% of 27 persons treated with lower doses for 14 days. Higher doses were too frequently toxic to be tested. Spontaneous cures occurred in untreated controls and the effectiveness of these drugs was somewhat related to the intensity of infection.

R.T.L.

449—Journal of the Society of Textile and Cellulose Industries, Japan.

- a. SHIMIZU, I. & KOBAYASHI, S., 1956.—[Studies on wool fibre of sheep parasitized by flukes. I. Chemical observations.] **12** (10), 727–731. [In Japanese: English summary p. 727.]

450—Journal of the South African Veterinary Medical Association.

- a. HURTER, L. R., 1956.—“Subcutaneous carbon tetrachloride in helminthiasis of ruminants and pigs.” **27** (4), 255–257.
b. HOFMEYER, C. F. B., 1956.—“Two hundred and eighty-four autopsies at the National Zoological Gardens, Pretoria.” **27** (4), 263–282.

(450a) Faecal examinations and autopsies were made on sheep, cattle and pigs which had been injected subcutaneously with carbon tetrachloride in liquid paraffin as an anthelmintic. The local reactions were severe but there was little or no reduction in the severity of the various helminth infections.

R.T.L.

(450b) The causes of death in 284 autopsies on 73 mammalian species which died in the Zoological Gardens at Pretoria are tabulated. Those in which death was attributed to helminths were one giraffe with *Trichuris* infection, one steenbok with cachexia and taeniasis, one Transvaal zebra with *Strongylus* infection and six impala with worm infections.

R.T.L.

451—Journal of the Tennessee Academy of Science.

- a. JONES, A. W., KERLEY, C. & SNEED, K. E., 1956.—“New species and a new subgenus of *Corallobothrium* (Cestoda, Proteocephala) from catfishes of the Mississippi Basin.” **31** (3), 179–185.
b. JONES, A. W., 1956.—“The chromosomes of a species of *Halipegus* Looss, 1899 (Digenea: Hemiuridae).” **31** (3), 186–187.
c. MANN, P. H., 1956.—“The histopathology produced in the albino mouse by *Schistosomium douthitti* Cort, 1914.” **31** (3), 208–211.

(451a) Jones, Kerley & Sneed divide *Corallobothrium* into two subgenera, *C. (Megalothylacoides)* n.subg., which is restricted to the Mississippi Basin and in which the orifices of the suckers are partly encircled by a robust sphincter, and *C. (Corallobothrium)* n.subg., which is widely distributed and in which the suckers are devoid of sphincters. *C. giganteum* Essex, 1927 becomes type of the former and *C. solidum* Fritsch, 1886 of the latter. *C. (M.) rva* n.sp. from *Pilodictis olivaris*, *C. (M.) procerum* n.sp. from *Ictalurus furcatus* and *C. (M.) thompsoni* n.sp. from *I. lacustris punctatus* are described and figured. The new species are differentiated from each other and from *C. (M.) giganteum* and their distinguishing characteristics are shown in a table.

S.W.

(451b) Jones has examined the chromosomes of a species of *Halipegus* (probably *H. occidialis*). The diploid number was 18, with three larger and six smaller pairs; the smallest were less than 1μ long and the largest 3μ long. Meiosis in male and female gametocytes appeared to be normal. During cleavage the macromeres retained the characteristic “yolk granules” of the ovum.

S.W.

452—Journal of the Washington Academy of Sciences.

- a. JENKINS, W. R., 1956.—“*Paratylenchus projectus*, new species (Nematoda, Criconematidae), with a key to the species of *Paratylenchus*.” **46** (9), 296–298.

(452a) No male is known for *Paratylenchus projectus* n.sp. The females average 373μ long, $a=18.7$, $b=4.0$, $c=15.4$, $V=84.3\%$ and stylets average 31.8μ long. There is no spermatheca and no post-vulval uterine sac. The lip region is truncate and slightly offset with

three transverse striations; the lateral field has four incisures. This species differs from others without known males in the form of the lip region, the presence of lateral flaps at the vulva and the length and form of the stylet. A key to the described species of *Paratylenchus* is given based chiefly on female characters. Large population increases of *P. projectus* occurred in pots of *Festuca elatior* var. Kentucky 31 and *Nicotiana tabacum* grown experimentally. M.T.F.

453—Journal of the West African Science Association.

- a. NOEL-BUXTON, M. B., 1956.—“Field experiments with DDT in association with finely divided inorganic material for the destruction of the immature stages of the genus *Simulium* in the Gold Coast.” 2 (1), 36-40.

(453a) Owing to the high incidence of onchocerciasis among the river staff of the Black Volta in Ghana, commercial D.D.T., thoroughly mixed with clay, was introduced into the river water at a dosage as low as 0.03 parts of D.D.T. per million parts of water. This proved highly successful against the larvae of the *Simulium* vectors without destroying the fish. R.T.L.

454—Kieler Meeresforschungen.

- a. GERLACH, S. A., 1956.—“Diagnosen neuer Nematoden aus der Kieler Bucht.” 12 (1), 85-109.
- b. GERLACH, S. A., 1956.—“Die Nematodenbesiedlung des tropischen Brandungsstrandes von Pernambuco. Brasilianische Meeres-Nematoden II.” 12 (2), 202-218.

(454a) Gerlach gives descriptions and diagnoses of six new genera and 39 new species of marine nematodes collected in samples of sediment from different parts of Kiel Bay. *Wieseria* n.g. has as its type species *W. pica* n.sp. This genus is placed in the Oxystominidae and has three well developed rings of long bristles on the head; the lateral organs lie a short distance behind the head. In this genus are placed *Oxystomina glandulosa* (Kreis, 1929) and *O. longisetosa* Allgén, 1947, with *W. inaequalis* n.sp. and *W. clavata* n.sp. *Comesa* n.g., has as its type species *C. corcunda* n.sp. The position of this genus is uncertain; it combines characters of the Cyatholaimidae, the Comesomidae and the Microlaimidae. It has six small lip papillae and four head bristles, spiral lateral organs, transverse rows of punctations on the cuticle, mouth as in *Microlaimus*, oesophagus with posterior bulb, and pre-anal papillae as in the chromadorids. *Chitwoodia* n.g., has as its type *C. falcata* n.sp. This is placed doubtfully in the Diplopeltidae: the head has two rings of six and four long head bristles, the lateral organs are round with an elongated dorsal leg, the spicules with a dorsal branch. The genus has a second species, *C. menora* n.sp. *Coninckia* n.g., with type *C. circularis* n.sp., is of uncertain position: the cuticle is smooth, the head is provided with lip papillae and two rings of six and four bristles, the lateral organs are circular with outline broken posteriorly, there is no mouth opening, the female gonads are paired and the gubernaculum has a dorsal limb. *Meylia* n.g., has as its type *M. alata* n.sp. and species *M. lissa* n.sp. and *M. spinosa* n.sp. The systematic position is hard to determine but the form of the anterior end makes it appear possible that they are related to the Desmoscolecidae. There are four strong head bristles on the conically drawn out head, the lateral organs are of the spiral type and the cuticular ornamentation varies in the three species. *Paratricoma* n.g., with type *P. papillifer* n.sp. closely resembles *Tricoma* but has papilla-like warts on the cuticle which are only indistinctly in rows. The 28 other new species described are from known genera and are as follows: *Microlaimus combridus* n.sp., *Spiliphora hirsuta* n.sp., *Metacomesoma aequale* n.sp., *Didelta cascudum* n.sp., *Diplopeltula striata* n.sp., *D. nuda* n.sp., *Campylaimus lefeverei* n.sp., *C. cylindricus* n.sp., *Dasynemella conica* n.sp., *Leptolaimus nobilis* n.sp., *L. tenuis* n.sp., *Lauratonema originale* n.sp., *Barbonema horridum* n.sp., *Litinium bananum* n.sp., *Halalaimus horridus* n.sp., *H. striatus* n.sp., *H. papillifer* n.sp., *Saveljevia cornuta* n.sp., *Paracyatholaimus occultus* n.sp., *Nannolaimus volutus* n.sp., *N. fusus* n.sp., *Choniolaimus panicus* n.sp., *Polysigma fuscum* n.sp., *Theristus hamatus* n.sp., *T. curvatus* n.sp., *T. maior* n.sp., *T. trichinus* n.sp. and *Scaptirella tenuicaudata* n.sp.

M.T.F.

(454b) Gerlach describes the nematodes found in numerous samples taken from the beach near Recife, Pernambuco, giving numbers of each species found in the various types of environment. Altogether 65 species are named including one new genus and 13 new species which are described and illustrated. The new genus *Robbea* n.g., with its type *R. caelestis* n.sp., belongs to the Desmodoridae differing from the other known genera in the characteristic form of the oesophagus which has an offset muscular anterior region. The other new species are: *Chaetonema canellatum* n.sp., *Latronema botulum* n.sp., *Sabatieria supplicans* n.sp., *Comesoma arenae* n.sp., *C. siphon* n.sp., *Desmodora rabosa* n.sp., *Richtersia imparis* n.sp., *Hypodontolaimus pumilio* n.sp., *Trichromadora macris* n.sp., *Halinema varicans* n.sp., *Steineria scopae* n.sp. and *Sphaerolaimus penicillus* n.sp. M.T.F.

455—Kinderärztliche Praxis.

- a. WECHSELBERG, K., 1956.—“Zur Behandlung der Wurmkrankheiten in Kindesalter (*Oxyuris vermicularis*).” **24** (7), 312–322.
- b. MASCHKE, R., 1956.—“Beitrag zur Paragonimiasis (Haemoptysis parasitaria) im Kindesalter.” **24** (9), 390–406.
- c. GLANDER, R., 1956.—“Zur Behandlung der Oxyuriasis bei Kindern mit Piperazinadipat.” **24** (12), 534–536.

(455a) Wechselberg reviews recent literature on the treatment of enterobiasis in children with special reference to phenothiazine, triphenylmethane dyes, hexachlorocyclohexane, proteolytic enzymes, antibiotics and sulphonamides, and piperazine. A.E.F.

(455b) Maschke presents an account of the sources of infection, differential diagnosis, pathological anatomy and treatment of paragonimiasis in children, based on 20 Korean school-children treated in a hospital in Germany in 1953–55. Six of the cases are described in detail. Treatment with emetine, sulphonamides and antimony preparations (usually in combination) generally led to a reduction in egg counts but complete cure was exceptional. A.E.F.

(455c) Glander reports on the use of Vermicompre (tablets, each containing 0.3 gm. piperazine adipate) against *Enterobius vermicularis* in children. A total of 69 children of all ages were given 0.2 gm. per day per year of age for seven days. By the eighth day 65 of the children were negative for ova and remained so when examined daily throughout the following week. A.E.F.

456—Klinische Medizin.

- a. MAIER, F., 1956.—“Ein Beitrag zur Frage der Pathogenität der *Oxyuris vermicularis* (Oxyuren-peritonitis).” **11** (7), 319–322.

(456a) Maier describes a case of peritonitis in a 29-year-old male in which two specimens of *Enterobius vermicularis* were found in the abdominal cavity without any signs of perforation in the region of the intestinal tract. He concludes that the worms must have actively penetrated the intestinal wall. A.E.F.

457—Klinische Monatsblätter für Augenheilkunde und für Augenärztliche Fortbildung.

- a. BRANLY, M. A., 1956.—“Über die Onchozerkosis (Morbus Robles).” **128** (1), 1–15.

(457a) Branly gives a general account of onchocerciasis in man, dealing particularly with transmission, symptoms, diagnosis, and treatment. A.E.F.

458—Klinische Wochenschrift.

- a. REESE, G., BORNEMANN, V. & MÄDER, E., 1956.—“Leberegel beim Menschen: Klinik und Biopsie.” **34** (41/42), 1131–1137.

(458a) Reese *et al.* describe four cases of *Fasciola hepatica* infection in children. Treatment with emetine was successful in three of the cases and complement fixation was negative

after three months: in the fourth case, a severe one, complement fixation was still strongly positive 30 months later. The differential diagnosis of liver-fluke infection in man is discussed

A.E.F.

459—Kongelige Norske Videnskabers Selskabs Forhandlingler.

- a. ALLGÉN, C. A., 1956.—"Vergleich zwischen den marinen Nematodenfaunen Norwegens und denen des antarktisch-subantarktischen Gebietes." Year 1955, 28, 71-76.
- b. ALLGÉN, C. A., 1956.—"Vergleich zwischen den marinen Nematodenfaunen Norwegens und denen der Atlantikküste Europas." Year 1955, 28, 77-83.
- c. ALLGÉN, C. A., 1956.—"Vergleich zwischen den marinen Nematodenfaunen Norwegens und denen des Mittelmeers sowie angrenzender nordöstlicher Meeresabschnitte (Marmaraisches Meer und Schwarzes Meer, Azow'sches Meer und Kinburgsee) I." Year 1955, 28, 84-88.
- d. ALLGÉN, C. A., 1956.—"Vergleich zwischen den marinen Nematodenfaunen Norwegens und denen des Mittelmeers sowie angrenzender nordöstlicher Meeresabschnitte (Marmaraisches Meer und Schwarzes Meer, Azow'sches Meer und Kinburgsee) II." Year 1955, 28, 89-95.

(459a) Allgén reviews the literature dealing with marine nematodes in the Antarctic and sub-Antarctic and gives the numbers of species found both there and in Norwegian waters. It is of great interest to find that many northern species are found also in south polar regions.

M.T.F.

(459b) After briefly mentioning the literature on the marine nematode fauna of the Atlantic coasts of Europe, Allgén tabulates the numbers of Norwegian species and the numbers of those common to the waters of the Atlantic coasts and of Norway, without mentioning any species by name.

M.T.F.

(459c) Allgén gives the numbers of species of marine nematodes described in the literature from various regions of the Mediterranean and neighbouring waters to the north-east. He gives the percentages of species in the different areas which have also been recorded for Norway.

M.T.F.

(459d) In the second part of his paper Allgén gives tables showing the number of known species of marine nematodes recorded in a number of Norwegian localities and the numbers of these species common to the Mediterranean region. Similarly, for a number of places in the Mediterranean and to the north-east he gives the numbers of nematode species recorded and the number of these which are common to Norwegian waters. No names are mentioned.

M.T.F.

460—Lancet.

- a. RIFAAT, M. A. & NAGATY, H. F., 1956.—"Piperazine treatment of *Ascaris* infestation. [Correspondence.] Year 1956, 2 (6934), 148.

(460a) One dose of 6 gm. of piperazine adipate, in tablet form, was administered to each of 35 individuals infected with *Ascaris lumbricoides*. All of the cases expelled worms within 48 hours, but two showed a few eggs in the faeces afterwards. These were completely cured when the dose was repeated ten days later. This use of a single high dose has obvious advantages in mass treatment campaigns.

R.T.L.

461—Lunds Universitets Årsskrift.

- a. WIESER, W., 1956.—"Reports of the Lund University Chile Expedition 1948-49. 26. Free-living marine nematodes. III. Axonolaimoidea and Monhysterioidea." N.F. avd. 2, 52 (13), 115 pp.

(461a) Continuing his account of the free-living marine nematodes collected by the Lund University Chile Expedition, 1948-49 Wieser adds 23 new species of Axonolaimoidea and 21 new species of Monhysteridae of which *Promonhystera* n.g. and *Spiramphinema* n.g. are new. The genus *Theristus* is now subdivided into six subgenera of which *Pseudotheristus*, *Pseudosteineria*, *Mesotheristus* and *Cylindrotheristus* are new. The following are synonyms: *Digitonchus* of *Aconthiolaimus*, *Onchium* and *Onchulella* of *Nemella*, *Parabathylaimus* and

Bathylaimoides of *Bathylaimus*, *Cryptolaimus* of *Terschellingia*, *Monhysteriella* of *Metalinhomoeus*, *Bathylaimella* of *Tubolaimus*, *Chromagaster* Steiner nec Cobb and *Parachromagasteriella* Stekhoven nec Allgén of *Southerniella*, *Nijhoffia* of *Prosphaerolaimus*, *Zanonema* of *Halinema*, *Alaimonemella* of *Tubolaimella*, *Pandolaimus* of *Eumorpholaimus*, *Parasphaerolaimus* of *Sphaerolaimus*, *Metadesmolaimus* of *Theristus*. Thirty-nine species are made synonyms. Fifty-seven species are transferred to other genera as new combinations. Six new names are made, viz., *Odontophora parangustilaima* nom.nov. for *O. angustilaima* Stekhoven nec Filipjev, *Nemella metocellata* nom.nov. for *Onchulella ocellata*, *Metalinhomoeus pareffilatus* nom.nov. for *M. effilatus* Stekhoven, 1946 nec 1942, *Theristus heteroscanicus* nom.nov. for *T. scanicus* Allgén, 1949 nec 1942, *T. gerlachi* nom.nov. for *T. longisetosus* Gerlach nec Stekhoven & De Coninck, and *T. metanorvegicus* nom.nov. for *T. norvegicus* Allgén, 1945 nec 1933. The monograph is illustrated by 72 text figures.

R.T.L.

462—Meddelelser om Grønland.

a. BAER, J. G., 1956.—“Parasitic helminths collected in West Greenland.” 124 (10), 55 pp.

(462a) Concise descriptions, with 64 text figures, are given of 26 helminth species, viz., one nematode, two acanthocephalans, two trematodes and 23 cestodes collected in West Greenland. The parasites are also listed under their hosts. *Stegophorus stellae-polaris*, relatively rare in adult *Fulmarus glacialis* but present in large numbers of nestlings, is reported from West Greenland for the first time. *Arhythmorhynchus* (?) *distinctus* n.sp. from *Erolia maritima* possesses the smallest number (five) of hooks per longitudinal row of all known species. Only juveniles were collected. *Echinoparyphium groenlandicum* n.sp. from *Erolia maritima* is most nearly related to *Echinoparyphium aconiatum* but differs in having 36 spines on the collar, the smallest spines measuring $34\mu-36\mu \times 7\mu-9\mu$, the largest $41\mu-45\mu \times 9\mu-11\mu$ and the others 37μ to 39μ . The large follicles of the vitellaria reach as far as the ovary and meet dorsally and ventrally in the middle line immediately behind the posterior testis. *Pseudanthobothrium hanseni* n.g., n.sp., from *Raja radiata* is identical with material attributed by Rees (1953) to *Echeneibothrium minimum* Van Beneden and that described by Heller as *Anthobothrium cornucopia*. The scolex has a pedunculated myzorrhynchus. The stalked cup-shaped bothridia are very polymorphous and never divided by loculi. The genital pores are in the posterior half of the segment, the large and relatively few testes are all anterior to the cirrus pouch and the yolk glands form two continuous lateral bands of large follicles. The synonymy of *Anomotaenia armillaris* (Rudolphi, 1810) from *Uria lomvia* is discussed. The names *Taenia alcae* and *T. tordae* given by Fabricius are considered *nomina nuda*. Fuhrmann (1908 and 1932) erroneously lists the worm under *A. tordae* with *T. armillaris* as a synonym and the host as *Alca torda* L. *Taenia socialis* Krabbe nec Retzius, renamed *Anomotaenia socialis*, is also a synonym of *A. armillaris*. *A. meinertzhageni* n.sp. from *Uria lomvia* differs from other species in the location of the female glands in the oral half of the segment and the proglottides are broader than long. Baer considers *A. micracantha* Fuhrmann, 1908 nec Krabbe, 1869 a synonym of *A. meinertzhageni*. *Taenia megalorhyncha* Krabbe, 1869 is transferred to *Dilepis* and *Taenia petiostriis* to *Acanthocirrus* as new combinations. The absence of a rostellum has necessitated the creation of *Arctotaenia* n.g. for *Taenia tetrabothroides* Loennberg, 1890 and *Dilepis recapta* Clerc, 1906. *Hymenolepis groenlandica* (Krabbe, 1869) is transferred to *Haploparaxis* [*Aploparaxis*]. *H. [A.] japonensis* is a synonym of *H. furcigera*. *Hymenolepis fryei*, *H. claviciprus*, *H. neosouthwelli* and *H. baeri* are synonyms of *H. fusa* and *H. neoarctica* is a synonym of *H. cirrosa*. *H. lateralis* is probably a synonym of *H. ductilis* to which *Taenia microsoma* Krabbe, 1869 nec Creplin, 1829 also belongs. *H. litoralis*, *H. crocethiae*, *H. lauriei* and *H. guschanskoi* are synonyms of *H. nitida*. *H. hypoleuci* (Singh, 1952) is a synonym of *H. uralensis* Clerc, 1902. *H. vallei*, *H. magnisaccus* and *H. porela* are *nomina nuda*. *H. nitidulans* (Krabbe, 1882) is quite unacceptable on a morphological basis as type of *Nadejdolepis* Spasski & Spasskaya, 1954, for this genus contains quite unrelated species. *H. nitida* (Clerc, 1902 nec Krabbe, 1869) and *H. glareolae* (Singh, 1952) are synonyms of *H. nitidulans* (Krabbe, 1882). The *H. nitidulans* from *Turdus merula* identified by Rosseter in 1907 has no relationship with this species. R.T.L.

463—Mededelingen van de Landbouwhogeschool en de Opzoekingsstations van de Staat te Gent.

- a. OOSTENBRINK, M., 1956.—“De postulaten van Koch en enige andere mogelijkheden van bewijsvoering in de nematologie.” 21 (3), 341-350. [English summary p. 349.]
- b. GOFFART, H., 1956.—“Über das Zusammenwirken von Rüben nematoden (*Heterodera schachtii*) und Vergilbungskrankheit (Beta virus 4).” 21 (3), 351-360. [English summary p. 360.]
- c. BRANDE, J. VAN DEN, KIPS, R. H. & D'HERDE, J., 1956.—“Bestrijding van het aardappel cystenaaltje (*Heterodera rostochiensis* Woll.) met dimethylcarbaminezuuresters.” 21 (3), 361-369. [English, French & German summaries, pp. 367-368.]
- d. BRANDE, J. VAN DEN, KIPS, R. H. & D'HERDE, J., 1956.—“Veldproeven in verband met de bestrijding van het aardappelcystenaaltje met dichloorpropan-dichloorpropeen-mengsel.” 21 (3), 371-376. [English, French & German summaries pp. 375-376.]
- e. BIJLOO, J. D., 1956.—“De nematocide werking van N244 (3-p-chloorphenyl-5-methylrhodanine) en van N521 (3-5-dimethyl-tetrahydro-1-3-5-2H-thiadiazine-2-thion).” 21 (3), 377-386. [English summary pp. 385-386.]
- f. SEINHORST, J. W., BIJLOO, J. D. & KLINKENBERG, C. H., 1956.—“Een vergelijking van de nematocide werking van DD en van 3-5-dimethyltetrahydro-1-3-5-2H-thiadiazine-2-thion.” 21 (3), 387-395. [English summary p. 395.]
- g. KLINKENBERG, C. H. & SEINHORST, J. W., 1956.—“De nematocide werking van Na N-methyl dithiocarbamaat (Vapam) bij toepassing in de herfst.” 21 (3), 397-400. [English summary p. 400.]
- h. GILLARD, A. & BRANDE, J. VAN DEN, 1956.—“Bijdrage tot de studie der waardplanten van de wortelknobbelaaltjes *Meloidogyne hapla* Chitwood en *Meloidogyne arenaria* Neal.” 21 (4), 653-662. [English, French, German & Dutch summaries p. 661.]

(463a) The heterogeneity of a population of plant-parasitic nematodes and lack of knowledge of the extent that secondary organisms contribute to plant disease, prevent the use of Koch's postulates in determining the pathogenicity of a nematode species. Evidence of pathogenicity on a plant species may be obtained by building up the eelworm population on other plants and then subjecting the chosen species to the increased eelworm infestation.

J.J.H.

(463b) In green-house and field experiments Goffart investigated the effects of beet eelworm (*Heterodera schachtii*) and virus yellows on young and mature sugar-beet plants. In plants attacked by nematodes the development of the leaves was reduced more than that of the roots, and young plants therefore had a higher sugar content. Nematode-infested plants had a reduced soluble nitrogen and ash content, suggesting disturbance of the mineral uptake. The carbohydrate exchange was affected in yellows-infested plants, which caused less hindrance to growth than did nematode infestation. In plants infested with both nematodes and yellows, the nematodes are the primary cause of damage and they also increase the effects of yellows. Nematode-attacked plants were more susceptible to yellows in both green-house and field. While nematode attack alters the growth of leaves in the same direction as does yellows, it tends to reduce the ash content whereas yellows raises it. Yellows has a considerable influence on carbohydrate exchange in the leaf but nematodes do not directly affect this.

M.T.F.

(463c) Although Cystogon showed nematocidal activity in dune sand soil at a rate of 200 gm. per sq. metre and a depth of 20 cm., the authors conclude that the prospects of using it for control of the potato-root eelworm in sandy soils are remote.

C.C.D.

(463d) Using a pall-injector and constant flow apparatus mounted on a plough, fumigation of dune sand soil with D-D mixture effected at least a 99% kill of *Heterodera rostochiensis*.

C.C.D.

(463e) Replicated experiments with N244 and N521 were performed in microplots to study their influence on the control of potato-root eelworm. N244 showed little control and there was a persistent phytotoxic effect. N521 dug into or scattered on the surface of the soil gave good control resulting in a good yield of potatoes. In addition N521 gave good control of *Hoplolaimus uniformis* and *Pratylenchus pratensis*.

H.R.W.

(463f) A comparison of the nematocidal properties of D-D mixture and 3-5-dimethyl-tetrahydro-1-3-5-2H-thiadiazine-2-thione (N521) showed no differences in their effect on *Hoplolaimus uniformis* and *Pratylenchus pratensis*. The experiments were performed from September to March on sandy soil and both nematocides caused a marked decrease in numbers of these eelworms. H.R.W.

(463g) Application of Vapam on dune sand in the autumn gave good control of *Pratylenchus penetrans* and *Hoplolaimus uniformis*. H.R.W.

(463h) The authors tested a number of plants for their susceptibility to *Meloidogyne arenaria* and *M. hapla*, and they have also compiled lists of plants which have been named as hosts of these nematodes in the literature, together with the authorities for the records. In the experiments 11 plants were attacked by *M. arenaria*, of which seven are new host records for this species and four new records for the genus. The hosts of *M. hapla* comprise 14 greenhouse plants (12 new records, three new for the genus), 13 field crops (six new records, one new for the genus) and 27 weeds (24 new records, three new for the genus). Three plants inoculated with egg masses of *M. hapla* were not attacked after three months, namely *Adiantum cuneatum*, *Coffea robusta* and *Pteris cretica*. Six weeds growing in a field infested with *M. hapla* showed no galls, viz., *Bromus* sp. *Poa annua*, *Polygonum aviculare*, *P. persicaria*, *Setaria crus-galli* and *Spergula arvensis*. M.T.F.

464—Medicina Colonial. Madrid.

- a. PERERA y PRATS, A., 1956.—"Consideraciones sobre el quiste hidatídico de pulmón y su tratamiento actual." 28 (4), 240-265.

465—Meditsinskaya Parazitologiya i Parazitarnie Bolezni. Moscow.

- a. VASILKOVA, Z. G., 1956.—[The characterization of foci of ascariasis.] 25 (2), 99-106. [In Russian.]
- b. BARCHENKO, L. I., 1956.—[Viability and times of development of *Ascaris* eggs in the climatic conditions of Kiev.] 25 (2), 106-109. [In Russian.]
- c. LEVENSON, E. D., 1956.—[Characterization of the epidemiology of ascariasis in three foci in the Moscow region.] 25 (2), 109-117. [In Russian.]
- d. ZERCHANINOV, L. K., 1956.—[Epidemiology of ascariasis in the Sverdlovsk region.] 25 (2), 118-121. [In Russian.]
- e. VISHNEVSKAYA, S. M. ET AL., 1956.—[Epidemiology and prophylaxis of helminthiasis in the zone affected by the construction of the Kakhovka reservoir, the GES and the Upper-Ingulets canal.] 25 (2), 121-127. [In Russian.]
- f. BIZYULYAVICHYUS, S. K., 1956.—[Experimental control of helminthiasis in the Lithuanian SSR.] 25 (2), 127-131. [In Russian.]

(465a) Centres of human ascariasis in different topographical regions in Russia are discussed in relation to local climatic conditions and control measures. G.I.P.

(465b) In order to study their development and viability, *Ascaris* eggs in human faeces were placed 1-5 cm. deep in eight different soil plots at Kiev. Those put in the ground in April-May, June-July and the beginning of August became infective about July, August and September respectively. No development occurred from September to April. 85% to 96% of the eggs overwintering in the soil at various stages of development, including the infective stage, were viable the following year. During the spring-summer period, all eggs placed at a depth of 1 cm. in plots where soil humidity fell below 4% were killed, but 53% to 98% of the eggs reached infectivity on plots with humidity above 4%. The highest survival rate occurred in shady, clayey plots and the lowest in sunny, sandy plots. G.I.P.

(465c) During an examination for *Ascaris* eggs around houses and in gardens of three populated areas in the Moscow region with different topographical and sanitary conditions, it was observed that the number of eggs found was directly related to the degree of infection of the population. It is concluded that the soil is the basic factor in spreading ascariasis. G.I.P.

465—Meditsinskaya Parazitologiya i Parazitarnie Bolezni. Moscow (cont.)

- g. LEIKINA, E. S. & POLYAKOVA, O. I., 1956.—[A simplified method of immunologic diagnosis of helminthiasis. I. Agglutination reactions using adsorbed antigens for the diagnosis of experimental ascariasis and trichinelliasis of man.] **25** (2), 131-136. [In Russian.]
- h. PLOTNIKOV, N. N., 1956.—[Treatment of Diphylobothrium anaemia with vitamin B₁₂.] **25** (2), 136-138. [In Russian.]
- i. BUNIN, K. V. & GORBUNOVA, T. I., 1956.—[The efficacy of oxygen treatment when applied at different times in cases of dysentery concomitant with ascariasis.] **25** (2), 138-140. [In Russian.]
- j. SHULMAN, E. S. & BURAKOVSKAYA, K. A., 1956.—[Testing some new methods of treating Trichuris infections.] **25** (2), 141-145. [In Russian.]
- k. BUSLAEV, M. A., 1956.—[The results of control of parasitic diseases during 1951-1955 and problems for 1956-1960.] **25** (3), 195-202. [In Russian.]
- l. KOVTUN, A. S., 1956.—[The results of control of malaria and other parasitic diseases in the RSFSR during 1951-1955 and problems for 1956-1960.] **25** (3), 202-206. [In Russian.]
- m. SELIVANOV, K. P., 1956.—[The results of control of parasitic diseases in the Ukrainian SSR during 1951-1955, problems for 1956-1960, and plans for 1956.] **25** (3), 207-209. [In Russian.]
- n. KOSTINA, K. A., 1956.—[The results of control of parasitic diseases in Kazakhstan SSR during 1951-1955, problems for 1956-1960, and plans for 1956.] **25** (3), 210-215. [In Russian.]
- o. KAMALOV, N. G., 1956.—[The present state of control of ancylostomiasis in Russia and aims to organize a plan for its elimination.] **25** (3), 215-219. [In Russian.]
- p. ORLOV, I. V., 1956.—[The problem of eliminating Taenia infections in Russia.] **25** (3), 219-222. [In Russian.]
- q. GORDON, E. I., 1956.—[The rate of development of *Ascaris lumbricoides* ova at various temperatures.] **25** (3), 234-238. [In Russian.]

(465g) The agglutination reaction of antigens adsorbed on carmine was positive in 61 out of 65 serum samples from *Ascaris*-infected guinea-pigs and in all cases with sera from guinea-pigs and man infected with *Trichinella*. The reaction was specific and is a modification of Smorodintsev & Fradkina's (1944) method for the diagnosis of typhoid fever. Five other adsorbents tested were ineffective. The agglutination and the ring precipitation reactions were compared, using three types of *Ascaris* antigens. The most active of these was the protein fraction dissolved in acid, giving 61 positive reactions out of 65 in the agglutination test and 20 out of 50 in the ring precipitation test. The polysaccharide-protein complex gave only 59 positive reactions out of 65 and 18 out of 50 respectively, but it is more stable and can be stored in ampoules at 4°C. for four to five months.

G.I.P.

(465h) The administration of 200 microgrammes of vitamin B₁₂ in ten injections was highly effective against anaemia in a woman in whom it had persisted for two years after treatment for *Diphylobothrium* infection.

G.I.P.

(465i) Two to three sessions of stomachal intubation of 1,200-1,500 ml. of oxygen, to patients suffering from dysentery concomitant with ascariasis, cured 88.7% of the *Ascaris* infections and greatly reduced the severity of both acute and chronic dysentery. The best time for treatment was five to six days after the beginning of acute dysentery or an upsurge of the chronic infection.

G.I.P.

(465j) Of the variants tried on the treatment of trichuriasis in man by oxygen, the most effective was a seven-day rectal intubation of oxygen alone or followed by an oral dose of thymol or of chenopodium and castor oil. 40.9% to 59.1% of the patients were cured.

G.I.P.

(465q) Gordon has plotted the speeds of development (S) of *Ascaris lumbricoides* eggs to the stage of a formed larva against effective temperatures (T) and, using Bodenheimer's formula for malarial mosquitoes $S = \frac{C}{T - t^0}$, has found the lowest temperature level for development (t^0) to be 10.3°C., while the sum of degree-days or "sum of heat" (C) necessary for the completion of development, varied between 140 and 200. Development at 23°C. to 26°C. when interrupted at any stage of larval formation for 6 to 23 days at 0°C. to 4°C., for 32 to 69 days at -1°C. to -5°C., and for 29 days at -9°C. to -12°C., was completed after the eggs

465—Meditsinskaya Parazitologiya i Parazitarnie Bolezni. Moscow (cont.)

- r. TIMOSHIN, D. G., 1956.—[Conditions favouring hatching of *Ascaris* larvae.] 25 (3), 239–244. [In Russian.]
- s. LEIKINA, E. S. & ZORIKHINA, V. I., 1956.—[A simplified method for the immunological diagnosis of helminthiasis. II. The application of the agglutination reaction with carmine in early diagnosis of ascariasis in a children's home.] 25 (3), 245–248. [In Russian.]
- t. SIMONOVICH, E. N., GRUZHEVSKI, V. E. & SOKOLOVA, M. N., 1956.—[Supplementation of Fülleborn's method.] 25 (3), 249–251. [In Russian.]
- u. GELLER, I. Y., 1956.—[A case of double infection of *Hymenolepis diminuta* and *H. nana*.] 25 (3), 269. [In Russian.]
- v. KRAFT, I. A., 1956.—[Biliary peritonitis in opisthorchiasis.] 25 (4), 291–294. [In Russian.]
- w. GOLOSOVA, S. I., 1956.—[Treatment of opisthorchiasis with hexachlorethane.] 25 (4), 294–295. [In Russian.]
- x. SINOVIKH, L. I., 1956.—[Hexachlorethane in the experimental treatment of clonorchiasis in cats.] 25 (4), 296–297. [In Russian.]

had experienced a number of warm days more or less equal to that of uninterrupted development (12 to 16 days). After 90 days of freezing at -12°C . to -15°C . only eggs at the one blastomere stage continued their development and only 10% of them completed it in the normal period of warm days. G.I.P.

(465r) *Ascaris lumbricoides* eggs lose their resistance to mechanical pressure with maturity. At room temperatures, 84% of mature eggs hatched under the action of 2.5 gm. per sq.cm., while in eggs of two to four blastomeres a weight of at least 7.5 gm. per sq.cm. only caused the splitting of the albuminous shell layer. Experiments on mature eggs showed that under the influence of various temperatures the largest number of larvae (73%) hatched after 20 hours at 36°C . to 40°C . and that the eggs became more sensitive to weight with increasing temperature. Thus over 80% hatched under 2.5 gm. per sq.cm. at 20°C . but under 0.25 gm. per sq.cm. at 40°C . Hatching was not influenced by bile or by gastric and duodenal fluids. G.I.P.

(465s) The agglutination reaction with carmine, which had given good results in the early diagnosis of ascariasis in experimental animals [for abstract see No. 465g above], was now tested in 50 children. Of 11 children reacting positively, the infection was confirmed in nine by coprological examination (in four only after dosing), but two passed neither eggs nor worms. This however does not show a lack of specificity of the reaction but rather a greater resistance of the children who had probably passed the worms when immature. The agglutination reaction was negative in 29 uninfected children and in ten with other helminth infections. Microprecipitation reactions on living larvae fully confirmed the results of the agglutination reaction. G.I.P.

(465t) In a modification of Fülleborn's method, one or two drops of a mixture in equal volumes of soft soap and ethyl alcohol are placed on to the surface of the emulsified faecal solution, reducing the surface tension under the drops and causing the eggs to congregate in the surface foam on the area free of the soap. As this foam is collected so the soap drops spread, ensuring the complete removal of eggs. Thus the examination of each sample is speeded up and light infections are revealed more frequently. G.I.P.

(465w) Cases of opisthorchiasis were treated by two daily doses of 8 gm. of hexachlorethane taken in 2 gm. portions at 15-minute intervals and followed by a low fat diet, free of alcohol and of acid and salty foods. After one course of treatment no eggs were found in the faeces of 11 and in the duodenal fluid of eight out of 32 patients. A second group of 33 persons received two courses of treatment and no eggs were found in the faeces of ten and in the duodenal contents of nine of these. But the 38 who required three or more courses of treatment remained infected. Infection intensities decreased in 40 while 80 showed clinical improvement. G.I.P.

(465x) Sixty-two cats with *Clonorchis sinensis* infections were treated with gelatin capsules of hexachlorethane in doses of 0.2 gm. to 2.0 gm. per kg. body-weight and on autopsy four to 15 days later some of the worms (1 to 42) were dead in 31 of the cats and all of them in seven. G.I.P.

465—Meditsinskaya Parazitologiya i Parazitarnie Bolezni. Moscow (cont.)

- y. ZENASHVILI, O. P., 1956.—[Certain contra-indications for carbon tetrachloride treatment of ancylostomiasis.] **25** (4), 297–301. [In Russian.]
- z. SHCHUKINA, L. A., 1956.—[Result of the treatment of hymenolepiasis with acridin (Acrichin).] **25** (4), 301–302. [In Russian.]
- ba. POSTNIKOV, V. V., 1956.—[Clinical picture of pulmonary paragonimiasis.] **25** (4), 303–305. [In Russian.]
- bb. GLUSKER, R. V. & GROMOVA, I. I., 1956.—[Clinical, pathological and anatomical characteristics of a case of strongyloidiasis.] **25** (4), 305–308. [In Russian.]
- bc. RUKHOVA, A. M., 1956.—[Ascariasis infection in Kishinev. (Pathological and anatomical investigations).] **25** (4), 372–374. [In Russian.]

(465y) Carbon tetrachloride should not be given to hookworm patients deficient in calcium salts, to those suffering from hyperthyreosis, which promotes calcium deficiency, to pregnant or lactating women or to cases of mixed *Ascaris* and hookworm infections. In such mixed infections the increase in excretory products from the *Ascaris* stimulated by this anthelmintic and the accumulation of toxic substances from the dead worms may result in the death of the patient. In patients with hypocalcaemia the treatment should be preceded by a course of calcium chloride and in cases of mixed infection by treating for *Ascaris* two weeks earlier.

G.I.P.

(465z) Three courses of treatment with Acrichin in doses of 0.15 gm. to 0.6 gm. given on an empty stomach, taken with 3% sodium bicarbonate and followed by a laxative, were 26.2% efficient in 180 children, aged three to 14 years, who were infected with *Hymenolepis*. Acrichin is less toxic than male fern extract which gave an efficacy of 38.2% in 140 children. It is recommended in cases where the extract has failed or cannot be applied.

G.I.P.

466—Medizinische. Stuttgart.

- a. RATSCHOW, M., 1956.—“Erfahrungen mit Piperazin-Zitrat in der Behandlung der Askariasis.” Year 1956, No. 50, pp. 1790–1791.

(466a) Ratschow reports on his use of the piperazine citrate preparation Tasnon in the treatment of 300 adults and 150 children for ascariasis. The preparation is in the form of a syrup and for adults a dosage of one dessertspoonful thrice daily for three days (45 gm. to 48 gm.) and for children one teaspoonful thrice daily for two days was found to be most suitable. The treatment was very successful and in only four adults were there any side effects (transient nausea and a little vomiting); none of the children showed any untoward symptoms.

A.E.F.

467—Medizinische Klinik.

- a. ANON., 1956.—“Die enzymatische Wurmbehandlung.” **51** (12), 462–469.
- b. DE MEILLON, B., 1956.—“Erforschung der menschlichen Bilharziose in Südafrika.” **51** (16), 670–673.
- c. MENTZEL, R., 1956.—“Blutegelbehandlung bei Herzkrankheiten.” **51** (22), 954–955.
- d. ELBERS, S. P., 1956.—“Über die Bekämpfung der Wurmpilge in Indonesien.” **51** (25), 1074–1075.
- e. WIGAND, H., 1956.—“Helminthiasen.” **51** (34), 1415–1416.

(467b) De Meillon describes the work of the Bilharzia Natural History Unit in South Africa since 1950. The principal intermediaries and their distribution have been studied; *Physopsis africana* for *Schistosoma haematobium* and *S. bovis* and *Biomphalaria pfeifferi* for *S. mansoni* appear to be most important. *Bulinus tropicus* and *Limnaea natalensis* are apparently not natural carriers. Diagnosis and pathology have been the subjects of much research and the testing of drugs on monkeys continues. For the future a field study group is to examine not only the problems of intermediaries but the effect on water of molluscicides, and also the ultimate fate of molluscicide residues.

A.E.F.

(467c) Mentzel describes the leech and its possible use in human medicine with special reference to heart disease. This treatment has been used with advantage in such conditions as apoplexy, arteriosclerotic disease of the myocardium and angina pectoris. He warns however that treatment with leeches "can never be a causal therapy": it can only play a secondary role.

A.E.F.

(467d) In Java and Borneo about 100 individuals with *Ascaris* or hookworm, or both, and *Enterobius* were treated with three dragées or three capsules of Vermella (a halogen oxyderivative of 1-methyl-4-isopropylbenzol), repeated five times at two-hourly intervals followed next day by the same dosage just before and two hours after breakfast and by castor oil in the afternoon. All the patients were cured. It is claimed that Vermella is much less toxic than hexylresorcinol.

R.T.L.

(467e) This is a brief summary of eight helminthological papers published by various authors between 1954 and 1956.

R.T.L.

468—Medizinische Monatsschrift. Stuttgart.

- a. SCHMIDT, J., 1956.—"Untersuchungen über den derzeitigen Oxyurenbefall, speziell bei Erwachsenen." 10 (4), 248-250. [English summary p. 250.]
- b. MÖSSMER, A., 1956.—"Über Wirksamkeit, Dosierung und Vergiftungserscheinungen von Piperazin-Präparaten." 10 (8), 517-526. [English summary p. 526.]

(468a) Schmidt reports that the incidence of *Enterobius* infection among children and young people in a home in Munich decreased by 25%. In the summer of 1955 examination of 200 females and 800 males between the ages of 16 and 60 gave an incidence of 28.8%; the lowest incidence was between 40 and 50 years (women 5.3%, men 12.4%).

A.E.F.

(468b) Mössmer's studies lead to the conclusion that piperazine is a very effective anthelmintic against *Enterobius* and *Ascaris*. The adipate was tolerated best both in animal experiment and human clinical trials. A single daily dose (which should not exceed 33 mg. per kg. body-weight) should be given for seven days against *Enterobius* and for three days against *Ascaris*. The dosage can be given more accurately when the drug is administered in tablet, rather than liquid, form. Diseases of the nervous system are a contra-indication for the administration of piperazine as they are likely to favour the development of side effects.

A.E.F.

469—Medlemsblad för Sveriges Veterinärförbund.

- a. BORG, U., 1956.—"Preliminära försök med piperazinadipat som medel mot spolmask och hakmask hos hundar." 8 (5), 61-62, 64.

(469a) Borg reports on preliminary tests of piperazine adipate against ascarids and hookworms in dogs. The drug was administered in tablet form without previous fasting or subsequent purging. A total of 75 dogs with ascarid infections were given either (i) 450 mg. per kg. body-weight in a single dose, or (ii) 300 mg. per kg. in a single dose, or (iii) 100 mg. per kg. on each of three successive days. Dosage (iii) proved to be most convenient since both (i) and (ii) caused some vomiting and other toxic symptoms. All but two of the dogs were cured although in some cases a second dose was necessary. In a second series of tests twelve dogs with hookworm infections were given varying doses (the optimum seemed to be 150 mg. per kg. on three successive days); nine dogs were cured. Although these tests were on only a small scale and cannot be conclusive Borg thinks that piperazine adipate shows promise as an efficient anthelmintic of low toxicity.

A.E.F.

470—Mémoires de l'Institut Scientifique de Madagascar. Série A. Biologie Animale.

- a. DOLLFUS, R. P. & CAMPANA-ROUGET, Y., 1956.—“Helminthes trouvés dans le tube digestif de coelacanthos.” 11, 33-41.
- b. CHABAUD, A. G. & BRYGOO, E. R., 1956.—“Description de *Rictularia lemuri* n.sp. (Nematoda: Thelaziidae).” 11, 43-49.

(470a) During the dissection of four specimens of the coelacanth *Latimeria chalumnae*, a *Scolex polymorphus unilocularis*, seven tetrarhynch plerocerci and 30 larval anisakids were found among the gut contents but are not considered to be true parasites of the coelacanth. One adult, one very young female and one fourth-stage larva belonging to the genus *Ascarophis* were attached to small depressions on the surface of the mucosa of the stomach. These are described and figured but, as no male was obtained, a specific identification was not possible.

R.T.L.

(470b) Chabaud & Brygoo describe and figure *Rictularia lemuri* n.sp. from *Microcebus murinus murinus*. The new species is compared with the three species it most closely resembles, namely, *R. jaegerskioldi*, *R. desportesi* and *R. nycticebi* but may be distinguished from them by the structure of the buccal capsule or the shape and arrangement of the cuticular spines. S.W.

471—Mimeograph Series. Georgia Agricultural Experiment Stations.

- a. GOOD, J. M., 1956.—“Plant parasitic nematodes of Georgia.” No. 26, 14 pp.

(471a) Good stresses the importance of plant nematodes in Georgia. Root-knot is considered the most serious nematode disease, five species and varieties (*Meloidogyne incognita*, *M. incognita acrita*, *M. arenaria*, *M. hapla* and *M. javanica*) being known to attack crops in the State. *Pratylenchus* spp., *Trichodorus* spp. and *Belonolaimus gracilis* are also wide-spread and serious pests. Others listed are species of *Tylenchorhynchus*, *Rotylenchus*, *Helicotylenchus*, *Criconemoides*, *Xiphinema*, *Hoplolaimus* and *Anguina*. Of occasional occurrence and minor importance are cyst, awl, bulb and stem, bud and foliar, pin, reniform and sheath nematodes. Cultural measures discussed are crop rotation, cultural practices and soil fumigation, and some suitable fumigants and their uses are listed.

R.D.W.

472—Mitteilungen der Deutschen Landwirtschafts-Gesellschaft.

- a. LÜHRS, 1956.—“Wurmkrankheiten in den Haustierbeständen.” 71 (24), 588-590.

(472a) Lührs draws attention to the serious effect on the national economy of helminth infections in domestic animals and estimates that liver-fluke and lungworm infection alone cost the Federal German Republic some 65 million marks (approximately 5½ million pounds) a year. He outlines recent developments in the treatment and prevention of these diseases and stresses the importance of pasture and stall hygiene in preventing the re-infection of animals which have been cured by anthelmintic treatment.

A.E.F.

473—Münchener Medizinische Wochenschrift.

- a. MELIK-GULNAZARIAN, E. A. & KOSTANIAN, N. K., 1956.—“Trichostrongyloidose des Menschen in Iran. Eine Beweisführung für die Tatsache, dass der *Trichostrongylus* nicht nur in den Eingeweiden des Menschen parasitiert, sondern auch in der Gallenblase, eitrige, nicht selten sehr schwere Gallenblasenentzündung (Cholecystitis purulenta) hervorruft.” 98 (42), 1424-1426. [English summary p. 1426.]

(473a) Melik-Gulnazarian & Kostanian report that *Trichostrongylus* infection in man is fairly wide-spread in Persia: they have records of 175 cases during the previous ten years. The parasites are found not only in the intestine: in 26% of the cases there was severe inflammation of the gall-bladder. Treatment with thymol was very successful where only the intestines were affected but infection in the gall-bladder was more resistant and complete cure was not attained.

A.E.F.

474—Nederlandsch Tijdschrift voor Geneeskunde.

- a. VOÛTE, A. D., 1956.—“De levensduur van eieren van *Ascaris lumbricoides* L. in de grond.” 100 (39), 2790–2792. [English summary p. 2792.]
- b. WYERS, H. J., 1956.—“Trichinosis.” 100 (41), 2954–2955.
- c. TROELSTRA, J. A. & VOÛTE, A. D., 1956.—“Infectiebronnen van *Ascaris lumbricoides* L.” 100 (47), 3426–3430. [English summary p. 3430.]

(474a) Voûte has carried out laboratory and field tests in various kinds of soil in order to determine the survival rate of *Ascaris* ova. In the laboratory percentage survival for two months was: in clay, 10%; in leaf mould, 30%; in garden soil, 50%; in sand 90%. In gardens very few ova survived from April until August either on the surface or at a depth of 10 cm. Voûte concludes that soil contains a factor which quickly kills *Ascaris* ova. A.E.F.

(474b) Wyers describes a case of trichinelliasis in an adult male. Diagnosis was by muscle biopsy, and there was fever, an eosinophilia of up to 38% and erythrocytes were found in the urine. The patient gave a history of having eaten the flesh of a wild boar. A colleague who had shared this meal but had shown no symptoms was then subjected to muscle biopsy and was also found to be infected. Wyers states that the disease is very rare in pigs in the Netherlands and is practically non-existent there in man. A.E.F.

(474c) Troelstra & Voûte report that in the eastern districts of Groningen (Netherlands) most infections with *Ascaris lumbricoides* are familial and the spread within the family depends on its hygienic condition. The use of human faeces for manuring land used for vegetable growing is thought to be only a minor source of infection. If cesspits are emptied infrequently they become overfull and this may mean that children are exposed to infection for long periods. A.E.F.

475—New Zealand Veterinary Journal.

- a. THOMAS, P. L., DOWNEY, N. E. & DREADON, R. S., 1956.—“Mortality in lambs due to enterotoxaemia associated with heavy infestations of *Moniezia expansa*.” 4 (4), 161–165.

(475a) Massive infections of *Moniezia expansa* were observed in lambs and exceptional numbers of oribatid mites were found on pastures in the Hawke's Bay area of North Island, New Zealand at the end of 1955. An early spring had followed an unusually mild and damp winter. In the Waipukurau district, where enterotoxaemia accompanied the *Moniezia* infections and losses often exceeded 10%, vaccination against enterotoxaemia was found to be the best control measure. Of three anthelmintics studied, the cheapest and most easily administered was a commercial preparation containing 32.6 gm. of copper sulphate and 15 gm. of nicotine sulphate per 100 c.c. of water. An aqueous dilution with 19 parts of water was given orally at a dose of 1 fl. oz. to five lambs and water was withheld for two hours afterwards. The preparation was reasonably effective. Two of five lambs died after dosing with copper methyl arsenate, probably as a result of fasting and poor health. The administration of lead arsenate suggested that even 0.5 gm. is not safe for animals in low condition. Enterotoxaemia was not detected in the test lambs. Only three of the four undosed controls had *Moniezia* in significant volume after these experiments. M.MCK.

476—Nordisk Veterinaermedicin.

- a. GUILDAL, J. A., 1956.—“Mågers betydning som spredere af baendelormeæg.” 8, 727–733. [English & German summaries pp. 732–733.]

(476a) Guildal illustrates by photomicrographs the eggs of *Taenia saginata* obtained from the alimentary canal of 6 out of 96 black-headed gulls and one of 34 common gulls. The egg count in one *Larus ridibundus* indicated that at its death it must have been carrying about 28,000 *Taenia* eggs. None were found in 15 herring gulls or in a lesser black-headed gull. R.T.L.

477—North American Veterinarian.

- a. ANON., 1956.—“Visceral larva migrans.” 37 (9), 761-762, 764.
- b. KLUSSENDORF, R. C., 1956.—“Worms of sheep.” 37 (10), 839-840.

(477a) Attention is drawn to recent American publications on cases of cutaneous and visceral larval migrans in children, due to larvae of *Toxocara canis* or *T. cati*, and the desirability of frequent worming of household pets is stressed.

R.T.L.

478—Ohio Journal of Science.

- a. GALLATI, W. W., 1956.—“Fibrosarcoma associated with the cysticercus of *Taenia taeniaeformis* in the liver of a muskrat.” 56 (2), 71-75.

479—Opuscula Zoologica. Instituti Zoosystematici Universitatis Budapestinensis.

- a. ANDRÁSSY, I., 1956.—“Süßwasser-Nematoden aus Französisch-West-Afrika.” 1 (1/4), 3-18.

(479a) *Chronogaster magnificus* n.sp., *Chronogaster* sp., *Ironus luci* n.sp., *Monhyстера somereni* Allgén, 1952 and *Dorylaimus brunettii* Meyl, 1953 are described and figured. Comment is made on *Gymonolaimus exilis* with which is synonymized *Cylindrolaimus abnormis* Allgén, 1933. *Chronogaster magnificus* has a very coarse annulation and 20-24 longitudinal divisions of the cuticle, very fine head bristles and a bifid tail; the male is not known. *Ironus luci* has a very long tail filament, the ventral wall of the stoma is thickened, and the vulva is at 24%: the male is unknown. All the eelworms dealt with were collected by Luc in the Ivory Coast.

J.B.G.

480—Outlook on Agriculture. London.

- a. SPEDDING, C. R. W., 1956.—“Worm-infestation in sheep.” 1 (3), 101-110.

(480a) The effect on live-weight, wool growth, and carcass quality of sub-clinical worm infestations in sheep is discussed. Experiments have shown that grazing management is most important in the control of sheep nematodes. It is possible by a rotational system of grazing in which the sheep are moved, at least every third day, to prevent reinfection and to keep infestation so low that it cannot be detected by egg counts. Lambs reared this way are free of all species except *Strongyloides papillosus* which, in small numbers, is not important. The practical application of this grazing system, however, is not completely satisfactory due both to human errors and to difficult climatic conditions. Further, it may not even be economic. The solution is a combination of grazing management based on the folding system and the use of anthelmintics at the correct time.

D.M.

481—Pakistan Journal of Health.

- a. JAN, N., KHAN, A. Q. & CHAUDHRY, T. R., 1956.—“Soil infestation with hookworm.” 6 (3), 188-190.

(481a) An area of about 107,360 square yards in a suburb of the City of Lahore was examined for hookworm larvae. Random samples of soil were taken from plots 25 square yards in area. 132 plots gave positive results and these were almost uniformly distributed throughout the whole area sampled.

R.T.L.

482—Pakistan Journal of Scientific Research.

- a. AKHTAR, S. A., 1956.—“A new oxyurid (Nematoda) parasitic in the Baluch pika.” 8 (3), 95-96.
- b. AKHTAR, S. A., 1956.—“On the nematodes (family: Oxyuridae Cobb, sub-family: Labiostominae n.subf.) parasitic in the pika of Alaska—Part I.” 8 (4), 133-139.

(482a) To the three known species of *Cephaluris* from pika, Akhtar adds *C. hashmi* n.sp. from *Ochotona rufescens vulturina* from the Manna Valley, north of Quetta. Its body and

eggs are smaller than in *C. andrejevi* and *C. coloradensis* and longer than in *C. ochotona*. A transverse depression crosses the prominent pre-anal cuticle and the surface of the anterior portion carries ten or eleven transverse rows of cuticular crests. The posterior portion which lacks crests is subtended near its anterior margin by two very small papillae. The caudal alae have five rows of longitudinal bosses along the inside of the lateral margins of their ventral surfaces.

R.T.L.

(482b) The oxyurid genus *Pikaeuris* Akhtar, 1953, is now considered a synonym of *Eugenuris* Schulz, 1948 as it differs only in characters of specific value. *Labiostomum*, *Eugenuris* and *Cephaluris* form a well defined group and are transferred to Labiostominae n.subf., in which *Labiostomum* only is characterized by a cuticular knob. *Cephaluris* has a pair of dorsal cuticular shields at the head end which *Eugenuris* lacks. Two new species of Labiostominae are described from *Ochotona collaris* from Alaska, viz., *Labiostomum rauschi* n.sp. in which the cephalic bulb is less than 0.25 mm. in diameter, whereas in *Labiostomum naimi* it exceeds 0.25 mm., and *Eugenuris talkeetnaeureis* n.sp. in which the lips are cylindrical with dorsal triangular flaps, whereas in *E. pikaeuris* they are triangular with lateral constrictions.

R.T.L.

483—Pakistan Review of Agriculture.

- a. TIMM, R. W., 1956.—“Nematode parasites of rice in East Pakistan.” 2 (3), 115–118.
- b. RAHMAN, M. H., 1956.—“Observations on *Limnaea acuminata*—the snail intermediate host of *Fasciola gigantica* in East Pakistan.” 2 (3), 122–123, 158.
- c. TIMM, R. W., 1956.—“The reniform nematode, a root parasite of *Vicia faba*.” 2 (3), 135.

(483a) Further morphological data are added to the descriptions of the known six species of nematode parasitic on rice reported by Timm (1955) from high land paddy in Pakistan. The presence of a ventral membrane or muscle on the spicule and a tiny sixth pair of caudal papillae are now recorded for *Paraphelenchus pseudoparietinus*.

R.T.L.

(483b) In East Pakistan nearly 75% of the cattle and 25% of the goats are infected with *Fasciola gigantica*. The local vector *Limnaea acuminata* does not aestivate, it does not enter mud and is unable to survive for more than four days on dry soil.

R.T.L.

(483c) Timm has found large numbers of *Rotylenchulus reniformis* in several plants of *Vicia faba* at Dacca in East Pakistan. Gelatinous egg masses closely adhered to the roots in which the heads of the females were embedded and a few males were recovered from root washings.

R.T.L.

484—Parasitologische Schriftenreihe. Jena.

- a. RÜHM, W., 1956.—“Die Nematoden der Ipiden.” No. 6, 437 pp.

(484a) This publication is divided into two parts. Part A deals with the effect of various physical conditions on the nematodes associated with bark beetles (Ipidae) and with their nutrition and behaviour. There are chapters on (i) the influence of the nematodes upon each other, (ii) the succession of nematode populations, (iii) the zonal development of those nematodes associated with bark beetles living in closed tunnel systems, (iv) the enemies of the nematodes and the specializations shown by several nematode families and by different stages of those which have a commensal, semi-parasitic or wholly parasitic existence. The developmental cycle of members of several genera and the effect of the parasites on the hosts are described. The evolutionary relationship between the Ipidae and their nematodes and the geographical distribution of the nematodes are discussed in the final chapters of the first part. In the second part the significance of certain morphological characteristics in the systematics and phylogeny of the nematodes are discussed. 168 species and five subspecies were found during the examination of 57 species of bark beetles, several species of weevils (Curculionidae) and some longicorns (Cerambycidae). 79 species and four subspecies of these nematodes were new; 114 species and five subspecies were associated with insects, mostly Ipidae, and 54 species were secondary nematodes or could not be established as associated with insects.

Of the 114 species, 65 species and four subspecies were commensals, seven species and one subspecies were semi-parasitic within the insects, eight species were ectoparasites, seven species were endoparasitic as larvae and 27 species were parasitic as adults. *Deladenus*, *Stictylus* and the subfamily Pseudodontinae are recorded for the first time in Europe. The adult-parasitic Tylenchoidea are placed in the families Allantonematidae and Contortylenchidae, a new family containing the new genus *Contortylenchus*. Two new subgenera, *Parasitylenchus* and *Sulphuretylenchus* are made in the genus *Parasitylenchus*. *Heterotylenchus* and the new genus *Polymorphotylenchus* with the new subgenera *Polymorphotylenchus* and *Thylakolenchus* could not be included in any existing family. The new genus *Sychnotylenchus* is placed in the family Tylenchidae Filipjev, 1934 in part. The family Sphaerulariidae is placed in the Aphelenchoidea. In the Aphelenchidae a new subfamily Parasitaphelenchinae is set up. The genus *Aphelenchoides* is divided into *Aphelenchoides* n.subg. and *Bursaphelenchus* (Fuchs, 1937) n.c. *Tylaphelenchus* n.g. is added to the subfamily Aphelenchinae. The new subfamily Tricephalobinae with the genera *Tricephalobus* and *Micronema* are placed in the Rhabditida. The new genus *Anguilluloides* is added to the Anguillulinae. The genus *Diplogasteroides* is divided into *Diplogasteroides* n.subg., *Rhabdombolaimus* and *Neodiplogasteroides* n.subg. The new species are described and figured.

J.J.H.

485—Pflanzenarzt. Vienna.

- a. FABER, W., 1956.—“Das Weizenälchen, ein alter Schädling in neuem Licht.” 9 (12), 111–112.

(485a) This is a popular account of *Anguina tritici* in which its life-history and bionomics are discussed.

J.B.G.

486—Pharmazie. Berlin.

- a. VALENTIN, J. & BROCKELT, G., 1956.—“Semen Cucurbitae als Bandwurmmittel.” 11 (6), 412–416.
 b. AKACIĆ, B. & PETRIČIĆ, J., 1956.—“Thymianöl als Anthelminticum.” 11 (10), 628–632.
 c. VALENTIN, J. & BROCKELT, G., 1956.—“Über die Standardisierung und die Gehaltsbestimmung des anthelminthischen Wirkstoffes in Semen Cucurbitae.” 11 (12), 796–798.

(486a) Valentin & Brockelt review earlier work on pumpkin seeds and their value as an anthelmintic against cestode infections. They then give a detailed account of their own researches on the nature and properties of the effective principle. *In vitro* experiments with an aqueous solution of the substance showed that solutions in various strengths from 0.005% to 0.5% killed enchytraeids in from 12 hours to 3 minutes.

A.E.F.

(486b) Akačić & Petričić have extracted an ethereal oil from *Thymus vulgaris* which they have tested as an anthelmintic. A concentration of 1:2,000 killed *Ascaris* in three hours and one of 1:4,000 killed leeches in the same time. The median lethal dose for mice was 1.98 gm. per kg. body-weight. The authors consider that this oil should be used instead of thymol but that it should first be tested clinically.

A.E.F.

(486c) Valentin & Brockelt describe a technique for isolating the effective anthelmintic principle from pumpkin seeds and for determining its content. The substance was found to be strongly toxic to enchytraeids, an 0.25% solution killing the worms in six minutes.

A.E.F.

487—Philippine Journal of Science.

- a. YUTUC, L. M., 1956.—“The extra-corporeal hatching of embryonated ova of *Trichuris vulpis* (Froelich, 1789).” 85 (2), 241–247.
 b. SARDJITO, M. & KOENIGSWALD, G. H. R. VON, 1956.—“The occurrence in Indonesia of two diseases, rhinoscleroma and bilharziasis japonica, whose spread is rooted deep in the past.” 85 (2), 295–304.

(487a) [An abstract of this paper was published in *J. Parasit.*, 1955, 41 (6, Sect. 2), 46–47. For abstract see *Helm. Abs.*, 24, No. 578cx.]

(487b) Although an epidemic focus of schistosomiasis japonica in three small isolated villages on the edge of the Lindu Lake in Celebes was discovered in 1937 by Brug & Tesch, it has not been encountered among the autochthonous population elsewhere in Indonesia. It is suggested that the infection reached these villages long ago and that it travelled from South China via an old temporary land bridge over Taiwan and the Philippines. R.T.L.

488—Phytiatrie-Phytopharmacie. Paris.

- a. RITTER, 1956.—“Espoirs donnés par la sélection de variétés résistantes dans la lutte contre l'anguillule des racines de la pomme de terre.” 5 (1), 41-51.

(488a) This is a resumé of the American, British, Dutch and German literature on resistance in the genus *Solanum* to *Heterodera rostochiensis* and on the breeding of eelworm-resistant potato varieties. The potato eelworm problem in France is a local or regional one, rather than national, three foci of infestation being known. R.D.W.

489—Phytopathology.

- a. HEGGESTAD, H. E. & GROSSO, J. J., 1956.—“Resistance of *Nicotiana knightiana* and other tobacco species to root-knot nematodes.” [Abstract of paper presented at 13th Annual Meeting of the Potomac Division, American Phytopathological Society, Beltsville, Md, March 1-2, 1956.] 46 (8), 467.

(489a) Root-knot nematodes, mainly *Meloidogyne incognita* var. *acrita*, were used for inoculating 48 species of *Nicotiana*. Thirty-two species were susceptible. *N. knightiana* was either free from galls or had only a few small galls with retarded nematodes in them. *N. repanda* had no galls. Good resistance was also shown by *N. arentsii*, *N. otophora* and *N. paniculata*, but they require further testing. A vigorous *N. tabacum* x *N. knightiana* hybrid has been developed and will be used in resistance tests. M.T.F.

490—Plant Disease Reporter.

- a. GRAHAM, T. W., 1956.—“Weed and root knot control in tobacco plant beds by surface drench and other treatments.” 40 (12), 1041-1044.
 b. HAWLEY, W. O., 1956.—“Hot-water treatment for the control of root-knot nematodes on *Dioscorea floribunda*.” 40 (12), 1045-1046.
 c. RASKI, D. J., SHER, S. A. & JENSEN, F. N., 1956.—“New host records of the citrus nematode in California.” 40 (12), 1047-1048.
 d. HUTCHINSON, M. T. & REED, J. P., 1956.—“The sting nematode, *Belonolaimus gracilis*, found in New Jersey.” 40 (12), 1049.
 e. GOOD, J. M. & THORNTON, G. D., 1956.—“Relative increases of populations of sting nematode, *Belonolaimus gracilis*, on six winter legumes.” 40 (12), 1050-1053.

(490a) Root-knot nematodes were present in sandy soil at one of the places where chemical treatments were carried out. The root-knot index was zero after surface drenches of Vapam at 1 lb. or 2 lb. per sq. ft. and Mylone at 2 lb. per sq. ft.; it was reduced to less than one after Vapam injected at 1 lb. per sq. ft. and N521 as a surface drench of 1.9 lb. per sq. ft. Mylone as a surface drench of 0.6 lb. per sq. ft., N521 at the same rate and DCB60 injected at 30 gal. per acre reduced the index to below 10 as compared with 10 in 1955 and 42 in 1956 on untreated plots. M.T.F.

(490b) In this preliminary test, finger-sized roots of *Dioscorea floribunda* infested with *Meloidogyne* spp. were immersed in water at 51°C. for 30 minutes. Six of the roots were then chopped and used as inoculum with tomato seedlings. After eight weeks only one of the ten seedlings had a trace of root-knot while controls were severely diseased. Of the 644 treated *Dioscorea* roots, 35% died but most of these were badly diseased before treatment. M.T.F.

(490c) *Tylenchulus semi-penetrans* has been found on two new hosts in California, *Syringa vulgaris* and *Vitis vinifera*, [the latter is already known as a host]. The roots of these two plants and *Diospyros lotus* were heavily infested by the nematode. Various vineyard weeds

were free from the eelworm. Specimens of *Meloidogyne incognita* var. *acrita*, *Pratylenchus* sp., *P. thornei*, *P. vulnus*, *Xiphinema americanum*, *X. index*, *Rotylenchus* sp. and *Criconemoides xenoplax* were also found in the vineyard soil. J.B.G.

(490d) The sting nematode, *Belonolaimus gracilis* Steiner, which is considered to be adapted to southerly climates of the U.S.A. has been found in two fields in New Jersey. H.R.W.

(490e) In pot experiments in the green-house, Good & Thornton studied the increase of populations of *Belonolaimus gracilis* on six winter legumes. Significant increases occurred on hairy vetch (*Vicia villosa*) and Dixie crimson clover (*Trifolium incarnatum*). The population decreased on bitter blue lupin (*Lupinus angustifolius*). Significant differences did not occur on Hubam sweet clover (*Melilotus alba*), sweet yellow lupin (*Lupinus luteus*) or Austrian winter pea (*Pisum sativum*). H.R.W.

491—Plant Pathology. London.

- a. GEORGE, K. S. & SOUTHEY, J. F., 1956.—“Tulip eelworm surveys in 1955.” 5 (3), 77–82.
- b. FIDLER, J. H., 1956.—“A method of estimating cyst contents with mixed batches of *Heterodera* spp.” 5 (3), 90–92.
- c. BROWN, E. B. & MASON, E. C., 1956.—“Unusual hosts of the chrysanthemum eelworm.” 5 (4), 151.

(491a) In an extensive survey for the incidence of tulip eelworm carried out in 1955 in Holland, Lincs., over 400 acres (25%) of tulips farmed by 134 growers (21%) were examined for the presence or absence of the pest. The stocks were examined at flowering and various data on the crop recorded. This data has been analysed in various ways which show that 11.5% of 2,153 stocks inspected were infested. Growers with less than 10 acres have a relatively high proportion of infested stocks whereas those farming over 10 acres tend to have a negligible amount of eelworm. Most of the trouble is found in the western part of the Holland Division. Small growers using rotations of two or three years have about 25% of their stock infested but large growers using five or six-year rotations have very low infestation. The more commonly grown varieties tend to be more infested. A national reconnaissance survey was also carried out which showed that most of the incidence of infestation was relatively higher in the Eastern and East Midland counties adjoining the Holland Division and that the remainder of the country was relatively free from the trouble. The evidence suggests that Dutch bulbs are not a source of infestation and that the eelworm is spread mostly in bulbs bought at bulb auctions. J.B.G.

(491b) Single soaked cysts of *Heterodera* spp. from mixed batches are opened with a Hagedorn needle on a perspex slide. The cyst is identified by examination of the vulva or by larval measurement. When identified, the cyst and contents are transferred to a beaker which contains cysts of one species only. At the end of the examination the cysts and contents are stirred in a boiling tube, and the numbers of eelworms in aliquots of the suspension are counted. Fidler shows that the eelworm counts are higher after mixing the suspension by a mechanical stirrer than after mixing by blowing into the suspension, and that the lower the egg content of the cysts the larger the difference. J.J.H.

(491c) The chrysanthemum eelworm *Aphelenchoides ritzema-bosi* (Schwartz) was found living endoparasitically in *Peperomia sandersii*, *Anchusa myosotidiflora* and *Solanum nigrum*. J.J.H.

492—Praktische Tierarzt (Der).

- a. SCHMIDT, H. W., 1956.—“Vögel als Konduktoren von Trichinen.” Year 1956, No. 10, pp. 292–293.

(492a) Schmidt draws attention to the possible part played by carnivorous birds in the transmission of *Trichinella*. Although the birds themselves do not become infected they can

carry cysts in their intestines and can infect animals which eat them: alternatively their faeces can become a source of infection. Measures taken to prevent fox and badger carcasses becoming accessible to birds will help to reduce the risk.

A.E.F.

493—Proceedings of the American Society for Horticultural Science.

- a. HARMON, F. N. & SNYDER, E., 1956.—“Comparative value of four rootstocks for Sultanina grape in rootknot nematode-infested soil.” 67, 308–311.
- b. GILBERT, J. C. & MCGUIRE, D. C., 1956.—“Inheritance of resistance to severe root knot from *Meloidogyne incognita* in commercial type tomatoes.” 68, 437–442.

(493a) Comparisons were made of the growth and yield from vines growing in soil heavily but unevenly infested with *Meloidogyne* sp. in California. Sultanina (*Vitis vinifera*) was used as scion on its roots and on three other root-stocks, viz., *V. champinii*, *V. rupestris* and [*V. longi*] × [*V. riparia* × *V. labrusca*] × *V. vinifera*, known as 1613. Weight of primary wood and fruit indicated that the *V. champinii* and 1613 root-stocks were the best. Root-knot ratings gave the highest degree of infestation on *V. vinifera* and *V. rupestris*, the lowest on 1613 and *V. champinii*.

M.T.F.

(493b) This paper summarizes work on the mode of inheritance of resistance to root-knot in tomatoes. Tests have confirmed the hypothesis that the inheritance of resistance to severe galling due to *M. incognita* is dominant and conditioned by one major gene. Preliminary tests suggest a linkage between the root-knot locus and potato leaf in linkage group IV, with about 40% recombination. Progeny tests of resistant plants selected for desirable horticultural qualities show a low proportion of homozygous resistant segregates. Homozygous resistance is associated with late maturity and a tendency to concentric cracking of the fruit. It is suggested that this is due to linkage rather than to pleiotropy, since field trials showed a few true-breeding lines without this association. There were very few homozygous lines in field selections made for horticultural quality. Recent crosses have given a greater proportion of selections with both good horticultural qualities and root-knot resistance, suggesting that the transfer of the resistant gene is getting easier due to the repeated breaking of undesirable linkages in resistant plants.

M.T.F.

494—Proceedings. Association of Southern Agricultural Workers.

- a. DEAN, J. L., FIELDING, M. J., FREEMAN, K. C. & COLEMAN, O. H., 1956.—“Effect of soil fumigation for the control of nematodes on sorgo production at Meridian, Mississippi.” [Abstract.] 53rd Annual Convention (1956), p. 64.
- b. JONES, J. E. & NEWSOM, L. D., 1956.—“Effect of soil fumigation for control of the reniform nematode, *Rotylenchulus reniformis*, on yield and lint characters of upland cotton.” [Abstract.] 53rd Annual Convention (1956), pp. 64–65.
- c. PEELE, T. C. & HAWKINS, R. H., 1956.—“Interrelations of irrigation, soil fumigation, and fertilization of crops grown on lakeland sand.” [Abstract.] 53rd Annual Convention (1956), p. 71.
- d. WILCOX, G. E., FIELDING, M. J., HOLLIS, J. P. & JOHNS, D. M., 1956.—“The nematocidal effect of soil fumigation on corn production at Homer, Louisiana.” [Abstract.] 53rd Annual Convention (1956), pp. 74–75.
- e. JOHNSON, W. A. & WARE, L. M., 1956.—“Effects of soil fumigation with EDB and D-D on yields and rootknot control on beans and squash.” [Abstract.] 53rd Annual Convention (1956), p. 150.
- f. BARHAM, W. S. & SASSER, J. N., 1956.—“Root knot nematode resistance in tomatoes.” [Abstract.] 53rd Annual Convention (1956), pp. 150–151.

(494a) Application of ethylene dibromide at 7.5 gallons per acre and at a depth of 4 inches successfully controlled parasitic nematodes in plots containing *Sorghum vulgare* varieties. The sorgo crop did not show any beneficial effects from this nematocidal treatment.

H.R.W.

(494b) In 1953–55 the authors investigated the effect of soil fumigation on yield, boll and lint characters of a number of wilt-resistant and wilt-susceptible cotton varieties grown on small field plots in an area of Louisiana heavily infested with *Fusarium* wilt and the reniform nematode. [The fumigant is not named and dosage rates are not given.] In general, signi-

ficant increases in yield and boll size resulted from fumigation. Yield increases, being greater in the case of the susceptible varieties, were attributed to direct control of nematodes with indirect control of wilt. The smaller yield increases for resistant varieties were ascribed mainly to nematode control.

R.D.W.

(494c) Irrigation experiments, including soil fumigation for nematode control, were carried out with four crops in South Carolina in 1954 and 1955. [Neither nematode nor fumigant is named.] Severe drought occurred in 1954, and irrigation alone was better than fumigation alone although both led to considerable increases in yield, and a combination of the two gave yield increases over irrigation alone as follows: cotton 37%, tobacco 71%, sweet-potatoes 31%. Maize yield was not affected by fumigation but was greatly increased by irrigation. In 1955, despite the very favourable rainfall, irrigated plots gave considerably higher yields than unirrigated, while fumigation led to relatively small increases in yield of cotton and tobacco and none in yield of sweet-potatoes and maize.

R.D.W.

(494d) Dowfume W-85, D-D mixture, and Nemagon were applied at 7, 25 and 3.5 gallons per acre respectively to control nematodes parasitic on the roots of maize in a randomized block experiment with threefold replication and unfumigated control. Maize growth on fumigated plots was more vigorous than on the control plots, and plant height, plant colour and plant health were also better. The three nematicides gave control of *Hoplolaimus* sp., *Trichodorus* sp., *Pratylenchus zeae* and *Xiphinema americanum* and increased the grain and stover yields. No difference among the fumigants were observed.

J.J.H.

(494e) Tests were conducted with very light-textured soil in field bins to determine the effects of soil fumigation with ethylene dibromide (W-40) and D-D mixture on crop yield and root-knot control. The fumigants were applied broadcast and in rows annually in February, and also broadcast in alternate years. Beans were planted in April, followed by squash as a second crop. Bean yields were not affected by fumigation in the first year but the other crops grown in the two-year period showed increases due to treatment. There were no significant differences between yields from row and broadcast treatments, nor between yields from EDB and D-D treated bins. All treatments reduced root-knot incidence.

R.D.W.

(494f) In a preliminary test two tomato lines, Hawaii 5229, Step 234 and the variety Queens were inoculated with *Meloidogyne incognita*, *M. i. acrita*, *M. arenaria*, *M. javanica* and *M. hapla*. Hawaii 5229 and Step 234 (which is an F₁ hybrid between Hawaii 5229 and Maui) were resistant to all except *M. hapla*, and Queens was susceptible to all species of *Meloidogyne* tested. Resistance appears to be controlled by one or more dominant genes.

M.T.F.

495—Proceedings of the Florida State Horticultural Society.

- a. FEDER, W. A. & FELDMESSER, J., 1956.—“Starting and maintaining burrowing nematode-infected citrus under greenhouse conditions.” 69, 29-30.
- b. TARJAN, A. C., 1956.—“The possibility of mechanical transmission of nematodes in citrus groves.” 69, 34-37.
- c. DuCHARME, E. P. & BIRCHFIELD, W., 1956.—“Physiologic races of the burrowing nematode in relation to citrus spreading decline.” 69, 42-44.
- d. FORD, H. W., 1956.—“Citrus rootstock selections tolerant to the burrowing nematode.” 69, 44-51.
- e. FELDMESSER, J. & FEDER, W. A., 1956.—“Use of 1,2-dibromo-3-chloropropane on living citrus trees infected with the burrowing nematode.” 69, 105-106.
- f. BURGIS, D. S. & OVERMAN, A. J., 1956.—“Crop production in soil fumigated with Crag Mylone as affected by rates, application methods and planting dates.” 69, 207-210.
- g. OVERMAN, A. J. & BURGIS, D. S., 1956.—“Fungicidal, herbicidal and nematocidal effects of fumigants applied to vegetable seedbeds on sandy soil.” 69, 250-255.

(495a) Citrus seedlings infected with *Radopholus similis* were obtained in quantity for experimental work by growing seedlings in large concrete tanks filled with subsoil containing pieces of infected root taken from below trees known to be infected.

J.B.G.

(495b) Soil samples were taken from the heavy agricultural machines used for clearing citrus groves affected by the burrowing nematode *Radopholus similis* (Cobb) Thorne. The numbers and genera of the nematodes found in these samples were listed. To simulate the conditions of spread of eelworms by machines, artificial clods of soil containing *Radopholus similis* were used to infect seedling grapefruits. It was concluded that under certain conditions, agricultural machines could transmit the nematode to new plantations. J.J.H.

(495c) Field observation suggested the existence of three physiological races of *Radopholus similis* able to parasitize citrus, banana or both. Experiments confirmed the existence of a banana race and a citrus and banana race. It is suggested that there may be other physiological races. J.B.G.

(495d) 54 citrus trees appeared healthy although surrounded by trees suffering from decline. Of these two rough lemon clones were tolerant to *Radopholus similis* even though they harboured many nematodes. One root-stock was resistant and populations of *R. similis* decreased and disappeared in infested soil when this clone was grown. A resistant factor was found in the root cortex which affected nematode eggs. The clone must be further tested for other characteristics before it can be used. J.B.G.

(495e) 1,2-dibromo-3-chloropropane (Nemagon) was used to treat soil around living citrus trees in order to control the burrowing nematode *Radopholus similis* (Cobb) Thorne. The nematicide was an emulsifiable concentrate containing 50% by weight of the chemical and was added to the soil as a drench, by hand injection and by pressure applicator. Treatments were at rates of 1, 2, 4, 13.8 and 27.6 gallons per acre. The first three treatments were not phytotoxic and were ineffective against the nematodes, the high dosages damaged the trees but reduced the nematode population. J.J.H.

(495f) Crag Mylone (3,5-dimethyltetrahydro-1,3,5,2 H-thiadiazine-2-thione) was applied to soil infested with root-knot nematodes at rates of 100, 150 and 200 lb. per acre one day after overhead irrigation with two inches of water. Half the plots were rolled and all were sown with carrots and red peppers at intervals of one, three, six, eight and ten days after treatment. There appeared to be no phytotoxic effect on carrots except on plots sown one day after treatment, and no differences in crop weight, but the root-knot index was much lower on the treated plots than the controls and 20% of carrots from the latter would normally be discarded because of damage. Peppers were more susceptible to chemical injury and germination was reduced on plots sown one and three days after treatment; two months after sowing plants on the 100 and 200 lb. plots sown one day after treatment and those on the 200 lb. plots sown on the third day were significantly smaller than the later sown ones and those from the 100 lb. plots. No galls were present on any of the pepper roots. It is concluded that Crag Mylone had practically disappeared from the soil six days after treatment and that it can give a high rate of control of root-knot nematodes for about 15 weeks after a dressing of 100 lb. per acre. Rolling the soil after treatment had no effect on control. M.T.F.

(495g) Adding Nemagon or D-D mixture to an allyl alcohol drench for seed-beds proved to be a successful fungicidal, nematicidal and herbicidal soil treatment. Vapam and Crag Mylone gave effective control also. Sowing of seed should be delayed for 5-7 days after treatment with D-D plus alcohol mixture and 10-14 days after Vapam and Crag Mylone. H.R.W.

496—Proceedings of the Indian Science Congress.

- a. GUPTA, S. P., 1956.—“Two new trematodes of the family Allocreadiidae from the fresh-water fishes of U.P.” [Abstract.] 43rd (1956), Part III, p. 284.
- b. GUPTA, S. P., 1956.—“A redescription of *Opisthorchis pedicellata* Verma (1927) and a re-consideration of the validity of *Opisthorchis pedicellata minuta* Mehra (1941).” [Abstract.] 43rd (1956), Part III, p. 285.
- c. GUPTA, S. P., 1956.—“A redescription of *Bucephalopsis magnum* (Verma 1936) Srivastava 1938.” [Abstract.] 43rd (1956), Part III, p. 285.
- d. PREMVATI, 1956.—“On a new metacercaria from the eyes of a fresh-water fish *Mystus seenghala* (Sykes).” [Abstract.] 43rd (1956), Part III, p. 285.
- e. CHOWDHURY, A. B., DASGUPTA, B., RAY, H. N. & BHADURI, N. V., 1956.—“Studies on calcareous corpuscles in *Taenia saginata*.” [Abstract.] 43rd (1956), Part III, pp. 285–286.
- f. SRIVASTAVA, A. S. & KATIYAR, K. P., 1956.—“Effects of diazinon, salicylic acid and benzoic acid on wheat nematode.” [Abstract.] 43rd (1956), Part III, p. 286.
- g. SRIVASTAVA, A. S. & SAXENA, H. P., 1956.—“Effects of diazinon on paddy nematodes.” [Abstract.] 43rd (1956), Part III, p. 286.
- h. CHAUHAN, B. S. & CHAUHAN, Y. S., 1956.—“Schistosomiasis in India.” [Abstract.] 43rd (1956), Part III, pp. 286–287.
- i. SAHU, K. C., 1956.—“Clinical observations on the incidence of chronic allergic dermatitis in intestinal parasitic infection.” [Abstract.] 43rd (1956), Part III, pp. 333–334.
- j. SANYAL, P. K. & CHAKRAVARTY, M. R., 1956.—“Action of cashewnut shell oil in rats.” [Abstract.] 43rd (1956), Part III, p. 349.
- k. SANYAL, P. K., ROHATGI, K. K. & ROY, A. B., 1956.—“Toxicity determination of several fractions of cashewnut shell liquid.” [Abstract.] 43rd (1956), Part III, pp. 350–351.
- l. KATHURIA, J. B., RAO, S. R. & HIREGAUDAR, L. S., 1956.—“Some observations on the bionomics of *Indoplanorbis exustus* Desm. (Gastropoda).” [Abstract.] 43rd (1956), Part III, p. 355.

(496a) *Allocreadium kaushivai* n.sp. from *Chela bacaila* is differentiated from all known *Allocreadium* except *A. pseudotritoni* by possessing a prepharynx, a cirrus pouch placed anterior to the acetabulum, and vitellaria extending to the posterior margin of the oral sucker. *A. mehri* n.sp. from *Rhynchobdella aculeata* at Lucknow, differs, in the extension of the vitellaria from the level of the ovary to the posterior end of the body, from all other species of the genus except *A. isosporum*, from which it can be distinguished by the acetabulum being larger than the oral sucker, by the small oesophagus, and by the position of the genital pore and testes.

R.T.L.

(496b) As Gupta has found, in *Rita rita*, fully mature specimens which are intermediate in size between *Opisthorchis pedicellata* described by Verma (1927) and *Opisthorchis pedicellata minuta* described by Mehra (1941) he concludes that these three forms are all the same.

R.T.L.

(496c) Slight variations were observed between the descriptions of *Bucephalopsis magnum* given by Verma (1936) and Srivastava (1938) and Gupta's own specimens [which are not described].

R.T.L.

(496d) A number of non-encysted metacercariae were collected from the vitreous humour of the eyes of a fresh-water fish, *Mystus seenghala*.

R.T.L.

(496e) The calcareous corpuscles in the parenchyma of *Taenia saginata* contain a variable amount of RNA and in some there is an appreciable amount of DNA. Glycogen, HAP and mucopolysaccharide were detected and simple proteins and lipids were also present in considerable amount. Definite alkaline phosphatase activity was detected. The presence of calcium was confirmed histochemically.

R.T.L.

(496f) Of various chemicals tested in the laboratory 0.1% diazinon, 0.03% benzoic acid and 0.05% salicylic acid in aqueous solution were the most promising in their lethal effect on *Anguillulina tritici*. They are being tested in the field as the infection is common in the wheat crop in the western district of Uttar Pradesh.

R.T.L.

(496g) When sprayed on the soil in paddy crops, 0.05% emulsion of diazinon completely controlled the eelworms in 72 hours. Its residual properties are being investigated.

R.T.L.

(496h) Survey of the molluscan fauna of the village Gimvi and the surrounding area in the Ratnagiri District of the Bombay State, where human schistosomiasis is endemic, revealed only two species *Paludomus obesa* and *Ferrissia tenuis*. Only the latter yielded cercariae resembling those of *Schistosoma haematobium*. R.T.L.

(496i) Among the various chronic allergic dermal manifestations observed by Sahu, were the development of vesicles and persistent pruritus due to hookworm toxin, and local itching and an eczematous condition and pruritus ani in *Enterobius* infections. Allergic dermatitis of the whole body was seen in roundworm and hookworm infections. Two cases of the vesicular weeping type of eczema due to hookworm infection are mentioned. R.T.L.

(496j) Experiments on rats indicated that raw and distilled cashew nutshell oil had a very injurious effect on the heart but the liver almost always remained normal. On proper processing [no details given] the oil maintains its anthelmintic property, toxicity is greatly reduced and in proper dosages can be used safely in the treatment of helminthiasis. R.T.L.

(496k) As crude cashew nutshell oil and its distillate cannot be administered orally, owing to its vesicant action, various fractions were obtained by distillation under vacuum, separated chromatographically and fed to rats. A yellowish liquid obtained as elute No. 2 from the Goa variety of oil was definitely less toxic than the other fractions tested. Even 0.5 c.c. of the diluted fraction was not fatal to the rats. R.T.L.

(496l) *Indoplanorbis exustus* which serves as an intermediate host of several trematodes of domesticated animals can easily be bred in an aquarium. The laying of egg-masses commences when the snail is six to eight weeks old and continues for about 45 days. An individual produces from 20 to 40 egg-masses containing in all between 400 to 600 egg capsules and eggs. Young snails emerge from the egg capsule in six to eight days. In Bombay State 5% to 10% of *I. exustus* are infected with furcocercous, distome and amphistome cercariae. R.T.L.

497—Proceedings of the Linnean Society of London.

- a. KENDALL, S. B., 1956.—“Liverflukes and snails in Asia.” [Demonstration.] 166 (1/2), 6.

(497a) Although *Limnaea truncatula*, vector of *Fasciola hepatica* and *L. auricularia rufescens*, vector of *F. gigantica* in Asia, occur in the same geographical areas in Asia, their respective habitats are clearly differentiated. R.T.L.

498—Proceedings of the North Dakota Academy of Science.

- a. SHUMARD, R. F., 1956.—“Speculation on the effectiveness of piperazine citrate in animal helminthology.” [Abstract of paper presented at the 48th Annual Meeting of the North Dakota Academy of Science.] 10, 76.

499—Proceedings and Transactions of the Rhodesia Scientific Association.

- a. CLARKE, V. DE V., 1956.—“Notes on the snail vectors of bilharziasis in the Central African Federation.” 44, 65–66.

(499a) Of the two species of *Bulinus* which are vectors of *Schistosoma haematobium* in the Federation of Rhodesia and Nyasaland, *B. (Physopsis) globosus*, which is the commoner, has a more northern distribution than *B. (P.) africanus* which is restricted to the southern regions of Southern Rhodesia. Although *B. (Pyrgophysa)* is found throughout Africa it has not been found naturally infected in the Federation. *Biomphalaria pfeifferi* is the only known vector of *Schistosoma mansoni* in Southern Rhodesia. Other species in the Federation are *B. angulosa* in Northern Rhodesia and *B. katangae* and *B. rhodesiensis* in localities in Northern Rhodesia and Nyasaland. R.T.L.

500—Proceedings of the Zoological Society of London.

- a. WRIGHT, C. A., 1956.—“Studies on the life-history and ecology of the trematode genus *Renicola* Cohn, 1904.” **126** (1), 1-49.
- b. DUNCAN, A., 1956.—“Notes on the food and parasites of grey seals, *Halichoerus grypus* (Fabricius), from the Isle of Man.” **126** (4), 635-644.

(500a) From a study of larval trematodes in *Turritella communis* and *Clupea sprattus* collected around or near the British coast, Wright throws light on the life-cycle of *Renicola*. He adds *Fratercula arctica*, *Puffinus puffinus* and *Colymbus arcticus* from Britain to the known hosts of *Renicola*. The *rhodometopa* type of cercariae (which are probably those of *Renicola*) found in *T. communis* included *C. cooki* n.sp. which has no prepharynx and apparently no gut, and *C. doricha-pigmentata* n.sp., with a slightly smaller body and larger excretory granules than *C. doricha* and with less extensive pigment around the oral sucker and in the tail than *C. pythionike*. The *rhodometopa* cercariae are of two types. (i) The *C. pythionike* type has only a median cluster of penetration gland cells and five flame cells per group. When sinking passively the cercariae lie more or less horizontally with the tail at right angles to the ventral surface of the body (K. N. Brown, in press). *C. cooki* belongs to this group. (ii) The *C. doricha* type has two lateral and a median cluster of penetration gland cells and six flame cells per group and the cercariae lie at a steep angle when sinking, with the tail uppermost and in line with the body. Wright suggests that the so-called second-layer (and presumably the primitive epithelium outside it) of the daughter sporocyst is not part of the sporocyst wall but is similar to the paletot described by Cort *et al.* (1952). The behaviour and oecology of *Turritella communis* are discussed in relation to its trematode infections. Eggs of *Renicola* did not hatch in fresh, brackish or sea-water but examination of *T. communis* shortly after they had ingested *Renicola* eggs showed free miracidia in the stomach and intestine. Of 511 *Clupea sprattus*, a newly recorded host for metacercariae of the *rhodometopa* group, 40.6% contained these metacercariae and this may explain the high incidence of *Renicola* in *Puffinus puffinus*. Wright adds 12 species of *Renicola* to his previous list (1954) of known species, with their bird hosts and localities, and discusses the criteria used for separating the species of *Renicola*. In *P. puffinus* the kidney showed some erosion of the tubules due to the presence of *Renicola* but no apparent tissue reaction, except for slight local eosinophilia in early infections; the occlusion of kidney tubules had no apparent harmful effect.

M.MCK.

(500b) The helminths found in two yearling seals, *Halichoerus grypus*, from the Isle of Man, were *Contracaecum osculatum*, *Porrocaecum decipiens*, *Anisakis* sp., *Corynosoma strumosum* and *Cryptocotyle lingua*. The last species has not apparently been recorded before from this host. Fisher (personal communication to the author) has observed that when Canadian grey and common seals die, nematodes habitually move from the stomach to the oesophagus, often emerging through the mouth or nasal cavities. They are sometimes present in the oesophagus and larynx if the seal vomits during capture.

M.MCK.

501—Profilassi.

- a. CARTA, A., 1956.—“Attività ialuronidasi e forme larvali dell'*Echinococcus granulosus* e della *Taenia solium*.” **29** (1), 3-8. [English & French summaries p. 8.]
- b. LAI, M., 1956.—“La strongilosi gastro-intestinale dei ruminanti in Sardegna. Nota II. Gli strongili dell'abomaso.” **29** (3), 100-108. [French summary p. 108.]
- c. PANEBIANCO, F., 1956.—“Il test di Thorn in cavie sperimentalmente infestate con uova embrionate di *Neosascaris vitulorum*.” **29** (6), 220-227.

(501a) No enzyme complex with hyaluronidase activity could be detected in *Cysticercus cellulosae* from the pig or in *Echinococcus granulosus* cysts from man, cattle, sheep and pig.

M.MCK.

(501b) Lai adds to his previous paper [for abstract see *Helm. Abs.*, **25**, No. 77a] the incidence of trichostrongyles in the abomasum in several hundred more domestic ruminants in Sardinia. The total incidence now is 46.864% of 574 cattle, 69.302% of 430 sheep and all of 355 goats. The most important species associated with parasitic gastritis were *Ostertagia*

516—*Revista Brasileira de Malariologia e Doenças Tropicais* (cont.)

- b. BARROS BARRETO, J. DE, 1956.—“ Métodos da profilaxia em massa, aplicáveis ao homem.” 8 (1), 57–74. [English summary p. 72.]
- c. CHUNG, H. L., 1956.—“ Recent advances in diagnosis of paragonimiasis.” 8 (1), 103–112. [Portuguese summary pp. 111–112.]
- d. MAZZOTTI, L., 1956.—“ Estudio de 48 casos de *Taenia solium*.” 8 (1), 227–229. [English summary p. 229.]
- e. LOBATO PARAENSE, W. & DESLANDES, N., 1956.—“ *Australorbis nigricans* as the transmitter of schistosomiasis in Santos, State of São Paulo.” 8 (1), 235–245. [Portuguese summary p. 240.]

(516b) Barros Barreto recommends tetrachlorethylene or hexylresorcinol for the mass treatment of hookworm and reviews types of examinations which can be made to determine whom to treat. In 1926 he observed that in those districts of Rio de Janeiro where 80% of the houses had sanitation and 80% of the population were treated, infection was reduced by 67%; where 50% of the houses had sanitation and 90% of the populations were treated or where 60% had sanitation and 75% were treated, infection was reduced by 45% while a reduction of only 23% ensued where 35% of the houses had sanitation and 50% of the population were treated. Mass treatment of schistosomiasis is difficult as no orally administered drug is generally accepted as satisfactory and patients should be taken into hospital before treatment with sodium antimony tartrate. In the control of filariasis bancrofti the administration of hetrazan once a week or once a month can greatly reduce the microfilaraemia and should be combined with mosquito control by using (i) dieldrin with aldrine or chlordane or (ii) HCB in preference to D.D.T.

M.MCK.

(516c) Positive intradermal and complement fixation tests to *Paragonimus* antigen, combined with a history of eating raw crab or crayfish from endemic areas, constitute reliable evidence of *Paragonimus* infection, even in obscure cases simulating other diseases, e.g. tuberculous peritonitis, tubercular meningitis or chronic bronchitis. Six clinical cases and two cases of autopsy are reported to illustrate this. The diagnosis of infections in two of these persons from the Chinese provinces of Kirin and Szechwan led to surveys in the incriminated localities and the recognition of these provinces as endemic areas for the first time. Most of the 257 individuals (out of 2,300 in one locality) who were positive to the skin test showed *Paragonimus* eggs in the sputum after repeated examinations. The cerebrospinal fluid was positive to the complement fixation test in 20 out of 24 patients with cerebral paragonimiasis and negative in the cases of patients without cerebral involvement. The sera of 50 of 51 cases of proved paragonimiasis were positive to complement fixation, but the sera were also positive in cases of clonorchiasis and leprosy without paragonimiasis. Chung recommends the skin test for use in epidemiological surveys and suggests that only the persons positive to the skin test need be subjected to sputum examinations and the complement fixation test.

M.MCK.

(516d) Ten of 48 patients with *Taenia solium* infections noticed that they expelled proglottides between defaecations and two experienced this as often as once or twice a week.

M.MCK.

(516e) The planorbids in Santos, Brazil, were identified as *Australorbis nigricans* by the study of 15,610 shells and 93 dissected specimens and by cross-fertilization experiments with albinos of *A. glabratus* and *A. nigricans*. Two forms were present. The rarer kind had a bi-concave shell with the left carina (which is characteristic of *A. nigricans*) conspicuously developed. The other form was characterized by an attenuation of the carina associated with flattening of the right concavity; although in extreme specimens this carina was somewhat rounded and nearer the suture than usual, such specimens could be distinguished from *A. glabratus* by the absence of a ventral ridge on the renal tube. A large number of snails collected where spring tides had flowed up a drainage canal died from haemorrhage caused by the salt water. This indicates that natural control of the snails would result if the sea were allowed to flow up these channels at least at spring tides. *Schistosoma mansoni* was found in three out of 5,000 and nine out of 11,524 planorbids from Santos and those infected were

516—Revista Brasileira de Malariologia e Doenças Tropicais (cont.)

- f. RACHOU, R. G., 1956.—“Transmissores da filariose bancroftiana no Brasil.” 8 (1), 267-279. [English summary p. 273.]
- g. CHAIA, G., 1956.—“Técnica para concentração de miracídeos.” 8 (2), 355-357. [English summary p. 357.]
- h. RACHOU, R. G., VILLELA, A. M., CRUZ, A. E. & CARVALHO, G. DE, 1956.—“A filariose bancroftiana em Recife (Pernambuco): resultado de um inquérito realizado em 1954-1955.” 8 (2), 359-367. [English summary p. 364.]
- i. RACHOU, R. G. & LACERDA, N. B., 1956.—“Da transmissão da filariose bancroftiana em Manaus (Amazonas).” 8 (2), 369-371. [English summary pp. 370-371.]
- j. LIMA, M. M., FERREIRA NETO, J. A. & RACHOU, R. G., 1956.—“Do ciclo evolutivo do *Culex pipiens fatigans* em condições experimentais: I. Fase de ovo.” 8 (2), 373-377. [English summary pp. 376-377.]

confined to the plano-concave form as observed by previous workers; the authors state that this is the first report of *S. mansonii* in *A. nigricans* but they also note that the infection has been observed by others in *A. immunis*, which will be shown to be a synonym of *A. nigricans* in a later paper.

M.MCK.

(516f) In 30 entomological surveys made in Brazil from 1951 to 1955 *Culex pipiens fatigans* was found infected with *Wuchereria bancrofti* in the States of Amazonas, Para, Amapa, Pernambuco, Alagoas, Bahia, Santa Caterina and Rio Grande do Sul. Other species in which *W. bancrofti* was found were *Anopheles darlingi* and *A. tarsimaculatus* (= *A. aquasalis*) in Belém (Pará) and *A. bellator* and *Culex* sp. (not *C. p. fatigans*) in Santa Catarina. Three *Aedes scapularis* with larvae which were probably of *W. bancrofti* were collected in a highly endemic locality in Santa Catarina. In Benjamin Constant and Maria Açu (Amazonas Territory), where *Wuchereria bancrofti* is absent but *Mansonella ozzardi* is present, filarial forms have been found in dissections of *Mansonia indubitans*, *M. humeralis*, *Psorophora albipes* and *P. ferox*.

M.MCK.

(516g) Chaia describes a method of obtaining a concentrated suspension of miracidia of *Schistosoma mansoni*. The faeces, suspended in 0.9% sodium chloride solution, are strained into a sedimentation glass, further saline is added and the suspension is left to settle for 15 minutes. After decanting, refilling and decanting again, the glass is filled with dechlorinated water at 25°C.-28°C. and the contents transferred to a globular funnel of 250 ml. capacity which has a stopper at the top and a stopcock on the stem. This funnel is filled with dechlorinated water at the same temperature, stopped with a rubber bung and inverted. The stopcock is then opened and the water level is brought well above it by adding a few ml. of water. The funnel, placed in a wooden box from which the stopcock projects, is exposed with the box door open to a source of light for 30 minutes. The door is then closed and the miracidia concentrate in the top few ml. which are still exposed to light. After the stopcock has been closed, the funnel is turned right way up and the concentrate is collected in a watchglass. By inverting the funnel, adding a little more water and exposing again to light for 30 minutes, the procedure can be repeated.

M.MCK.

(516h) In Recife, Brazil, the night blood of 6.9% of 23,065 persons contained microfilariae of *Wuchereria bancrofti* and infected persons were found in all the 13 districts examined in the town (two commercial areas were not included in the survey). Among 14,158 female *Culex pipiens fatigans* collected in the houses where the persons were examined, 7.3% were positive and 1% had infective larvae. It was calculated that there was at least one infected person in every five houses and one infected mosquito in every eight.

M.MCK.

(516i) Infective larvae of *Wuchereria bancrofti* were found in four, and preinfective larvae in 130, of 9,755 dissected specimens of *Culex pipiens fatigans* in Manaus. This town now constitutes the first known inland focus of *W. bancrofti* transmission in Brazil.

M.MCK.

- e. THORNTON, G. D., ENO, C. F. & SMITH, F. B., 1956.—“Influence of soil management practices on nematodes in Florida soils.” Year 1955-56, p. 134.
- f. SWANSON, L. E., DENNIS, W. R., STONE, Jr., W. M. & WADE, A. E., 1956.—“Control of internal parasites of cattle.” Year 1955-56, pp. 141-143.
- g. SWANSON, L. E., WADE, A. E., DENNIS, W. R. & STONE, Jr., W. M., 1956.—“Control of lungworm disease of cattle.” Year 1955-56, pp. 143-144.
- h. SUIT, R. F., DuCHARME, E. P. & BROOKS, T. L., 1956.—“Nature, causes and control of citrus decline.” Year 1955-56, pp. 166-168.
- i. SUIT, R. F., HANKS, R. W. & TARJAN, A. C., 1956.—“Control of spreading decline of citrus.” Year 1955-56, pp. 188-190.
- j. DuCHARME, E. P. & HANKS, R. W., 1956.—“Pathogenic complex of citrus spreading decline.” Year 1955-56, pp. 190-191.
- k. TARJAN, A. C., 1956.—“The biology of nematodes associated with citrus.” Year 1955-56, pp. 191-193.
- l. FORD, H. W., 1956.—“Resistance of citrus variety and rootstock selections to spreading decline.” Year 1955-56, p. 194.
- m. HAYSLIP, N. C. & KRETSCHMER, Jr., A. E., 1956.—“Vegetable-pasture rotation studies for sandy soils.” Year 1955-56, pp. 241-243.
- n. OVERMAN, A. J. & KELSHEIMER, E. G., 1956.—“Control of nematodes injurious to vegetable crops.” Year 1955-56, pp. 260-262.
- o. YOUNG, T. W., 1956.—“Nematode investigations.” Year 1955-56, pp. 316-318.
- p. EDDINS, A. H., 1956.—“Potato diseases. Effect of soil fumigants on potato stands, yields and root knot.” Year 1955-56, p. 330.

(508a) 890 root and soil samples were examined for plant-parasitic nematodes [but no findings are given]. Investigations of nematode injury to turf emphasized the importance of *Hoplolaimus coronatus*. Although there were differences between *H. coronatus* from different samples, these nematodes appeared to belong to one species. M.MCK.

(508b) Examination of 155 soil samples from Florida showed that the incidence of soil nematodes was unusually low except for *Trichodorus* sp., *Rotylenchus* spp. and *Helicotylenchus* spp. M.MCK.

(508c) No symptoms of phytotoxicity were observed when the nematicides Nemagon, V-C 13, parathion and demeton were tested on *Philodendron cordatum* and *Sansevieria zeylanica*. M.MCK.

(508d) Pre-planting soil drenches of Nemakril, V-C 13 and Vapam reduced nematode populations but did not eradicate them. M.MCK.

(508e) When pots containing crop plants in fumigated Arredondo fine sand were each inoculated with 50 sting nematodes, the highest reproduction rates were observed in association with hairy vetch (10.7), Aristogold sweet corn (9.4) and Dixie crimson clover (4.8). M.MCK.

(508f) Faecal samples from experimental cattle and ranch cattle were positive for *Fasciola hepatica* in 40.8%, *Dictyocaulus viviparus* in 14.6% and gastro-intestinal parasites in 67.6%. Piperazine citrate *per os* showed promise against *Cooperia* spp. and *Oesophagostomum radiatum* and combinations of phenothiazine, hexachlorethane and piperazine reduced faecal egg counts. M.MCK.

(508g) Several anthelmintics were tested and proved valueless for preventing or treating lungworm disease in calves. Intraperitoneal and subcutaneous injections of immune serum reduced the larval counts in challenged animals but not in those with established infections. M.MCK.

(508h) Suit *et al.* mention the auger method which has been developed for sampling the roots of citrus trees for nematodes. *Radopholus similis* parasitized sour orange seedlings in all of three types of soil tested. Experimental evidence suggested that there were three physiological races of *R. similis* separable by their ability to parasitize banana, citrus or both. M.MCK.

(508i) Citrus groves were successfully treated for *Radopholus similis* infection with D-D by the pull and treat method. Suit *et al.* describe experiments now in progress on the nematocidal treatment of soil around citrus trees. The nematocidal strength of aqueous preparations was reduced by about 95% after passage through 5 ft. of pre-wetted soil but remained relatively constant after passage through soil of low moisture content. M.MCK.

(508j) DuCharme & Hanks describe (i) the maintenance of *Radopholus similis* under axenic conditions on grapefruit seedlings and (ii) the traumatic and pathological effects of the nematodes on the seedling roots. M.MCK.

(508k) A device is illustrated for collecting nematodes from citrus roots and soil and 34 genera of nematodes are listed which were collected from soil adhering to mechanical grove equipment. *Radopholus similis* found on sugar-cane readily infected citrus roots. M.MCK.

(508l) Trials to propagate citrus trees tolerant to *Radopholus similis* infections from leaf bud cuttings indicated that cuttings from root sprouts took root more readily than cuttings from the top of the tree. M.MCK.

(508m) None of the populations of plant-parasitic nematodes found in about 150 soil samples from the Indian River area were considered large enough to present a threat to normal tomato production. M.MCK.

(508n) Experiments on the treatments of soils with nematicides showed that allyl alcohol plus EDB, and Crag Mylone, applied on soil before planting pepper seedlings, acted as combined herbicides, fungicides and nematicides. Treatment with EDB, D-D, Vapam and Crag Mylone increased maize yields. M.MCK.

(508o) Young describes four series of experiments in which he studied the increase of populations of *Radopholus similis* or *Pratylenchus brachyurus* on different hosts or in different types of soil. M.MCK.

(508p) Several nematicides were tested in soil infected with *Meloidogyne incognita* in which potato pieces were planted but neither the experimental nor the control plants developed root-knot. M.MCK.

509—Report of the Minister for Agriculture. Dublin.

- a. ANON., 1956.—“Annual report, 1955-56.” 25th (1955-56), 163 pp. + Appendices [81] pp. [See pp. 32-33, 71-72, 139-140, [16-17].]

(509a) The parasitology section in the pathology department of the Veterinary College of Ireland reports that of the faecal samples examined 76% of the horses showed infection with red worm, and a mixed infection of red worm and ascarids in 12%. Of the cattle, 52% had stomach worms, 10% had stomach worms and lungworms and 7% had stomach worms and liver-fluke. In sheep and goats gastro-intestinal worms occurred in 50% and stomach worms and *Dictyocaulus filaria* in 14%. In pigs 20% of the faecal samples showed *Ascaris lumbricoides* and 54% of 353 faecal samples from dogs and cats contained *Uncinaria stenocephala* ova. Adult *Echinococcus granulosus* were found at post-mortem on a greyhound born and bred in Dublin County. R.T.L.

510—Report of the Rothamsted Experimental Station.

- a. JONES, F. G. W., 1956.—“Nematology Department.” Year 1956, pp. 121-126.

(510a) During 1956 work in the Nematology Department, Rothamsted has been undertaken on various non-cyst-forming and other soil nematodes, on various species of *Heterodera*, and on some of the predators of the Heteroderidae. Certain nematode parasites of *Drosophila* have been studied and a revision of the taxonomy of the Mermithidae has been undertaken. J.B.G.

511—Report. West of Scotland Agricultural College.

- a. ANON., 1956.—“Potato root eelworm.” Year 1955-56, p. 44.

(511a) The section on potato-root eelworm in the report of the plant pathology department refers to the use of a machine for mixing non-volatile materials with soil for control of this eelworm pest. Treatment with yellow oxide of mercury using this machine gave about 75% control of the effective eelworm population on the plants and doubled the yield of potatoes. Reference is also made to experiments with D-D mixture as a nematicide for the control of potato-root eelworm on first-early crops.

H.R.W.

512—Research Bulletin of the Panjab University, Hoshiarpur.

- a. NATH, V. & SINGH, S., 1956.—“The nematode sperm.” No. 91 (Zoology), pp. 121-134.

(512a) From observations on fixed and stained preparations of testes of *Porrocaecum angusticolle* and pig *Ascaris*, Nath & Singh describe the primary and secondary spermatocytes. Living late spermatids and spermatozoa were studied by phase contrast microscopy. Spermatocytes in both species contained refringent granules; the authors were able to demonstrate, in *Ascaris*, the formation of these directly from Golgi elements; in *Porrocaecum* they coalesce during spermateleosis and form the acrosome of the ripe sperm. The mitochondria remain granular in *Porrocaecum* but increase considerably in size in *Ascaris*, appearing vesicular in the ripe sperm. The final stages in the transformation of the spermatid into the cone-shaped spermatozoon occur only after copulation and take place in the uterus. A mechanism for cytoplasmic reduction, which is probably unique, was observed in *Porrocaecum*; the spermatid extended pseudopodial processes which were then cut off. Golgi bodies were not observed in the ripe *Ascaris* spermatozoa.

S.W.

513—Revista de Agricultura. São Paulo.

- a. LORDELLO, L. G. E., 1956.—“Sôbre um nemátódeo do gênero *Pratylenchus*, parasito das raízes de *Allium cepa*.” 31 (3), 181-188. [English summary pp. 186-187.]

(513a) A root-lesion disease of onion was caused by *Pratylenchus coffeae* subsp. *brasiliensis* n. subsp. which is described and figured. It differs from *P. coffeae* in the shorter body and more anterior position of the vulva.

J.B.G.

514—Revista de Biología Tropical. Universidad de Costa Rica.

- a. MIRANDA, M., 1956.—“Contribución al estudio de la médula ósea en niños con anquilostomiasis y tricocefalosis.” 4 (1), 69-77. [English summary p. 76.]
- b. PEÑA-CHAVARRÍA, A., LIZANO, C. & XIRINACHS, H., 1956.—“Uso del citrato de piperacina en la ascariasis de enfermos con fiebre tifoidea.” 4 (2), 151-155. [English summary p. 154.]
- c. JIMÉNEZ-QUIRÓS, O. & BRENES, R. R., 1956.—“Presencia de *Leiurus* [*Leiuris*] *leptocephalus* (Rudolphi, 1819) Leuckart, 1850 en *Bradypus griseus griseus* (Gray, 1871) Allen, 1891.” 4 (2), 157-160. [English summary p. 160.]
- d. CABALLERO Y C., E., FLORES BARROETA, L. & GROCOTT, R. G., 1956.—“Helminths of the República de Panamá. V. Redescrpciones de algunos tremátodos ya conocidos pero nuevos en la fauna helmintológica de este país.” 4 (2), 161-177. [English summary p. 176.]

(514b) [This paper also appears in *Z. Tropenmed. u. Parasit.*, 1957, 8, 200-203. For abstract see *Helm. Abs.*, 26, No. 521.]

(514c) This redescription of *Leiuris leptocephalus* from the sloth *Bradypus griseus griseus* constitutes the first report of its occurrence in Costa Rica.

M.MCK.

(514d) *Duboisella proloba* is recorded for the first time from Panama where it was found in *Didelphis marsupialis etensis*. *Petalodistomum pacificum*, *Choledocystus intermedius*, *Glypthelmins linguatula* and *Mesocoelium travassosi* are also figured and described.

M.MCK.

515—Revista Brasileira de Biologia.

- a. FREITAS, J. F. TEIXEIRA DE & DOBBIN, Jr., J. E., 1956.—“Novo parasito de rã: *Catadiscus propinquus* sp.n. (Trematoda, Paramphistomoidea).” 16 (4), 439–441.
- b. FREITAS, J. F. TEIXEIRA DE, 1956.—“Notas sobre Heterakidae Railliet & Henry, 1914 (Nematoda, Subuluroidea).” 16 (4), 461–482.
- c. LOBATO PARAENSE, W. & DESLANDES, N., 1956.—“The Brazilian species of *Drepanotrema*. I. *D. anatinum* (Orbigny, 1835).” 16 (4), 491–499.
- d. LOBATO PARAENSE, W. & DESLANDES, N., 1956.—“The Brazilian species of *Drepanotrema*. II. *D. melleum* (Lutz, 1918).” 16 (4), 527–534.

(515a) *Catadiscus propinquus* n.sp. from *Rana palmipes* from Recife, Brazil, is similar in general appearance to *C. uruguayensis* but the vitellaria traverse the body dorsally behind the caecal bifurcation. In the gut of one of the trematode specimens Freitas & Dobbin found 21 eggs of *Haematoleechus iturbei* which was present in the same host. *H. iturbei* is thus recorded from Brazil.

M.MCK.

(515b) Freitas groups the members of the Heterakidae into five families. (i) Schneider-nematidae n.fam. comprises one subfamily Schneidernematinae n.subf. for *Schneidernema*; (ii) Lauroiidae n.fam. contains only *Lauroia*; (iii) Aspidoderidae n.fam. is created for *Aspidodera*, *Sexansodera*, *Ansiruptodera*, *Spinicauda*, *Paraspidodera* and *Africana*; (iv) Strongyluridae n.fam. is represented solely by Strongylurinae n.subf. for *Strongyluris* and *Moaciria*; and (v) Heterakidae which is now divided into three subfamilies as follows: Heterakinae contains *Heterakis*, *Ganguleterakis*, *Gireterakis*, *Meteterakis*, *Odontoterakis*, *Heterakoides* n.g. for *H. triaculeatus* n.comb. [originally *Ganguleterakis triaculeatus*] and *Pareterakis* n.g. for *P. howardi* n.comb. [transferred from *Africana*]. Preterakinae n.subf. is set up for *Preterakis astylosterni* n.g., n.comb. [first described as *Africana astylosterni*]. Spinaspidoderinae n.subf. contains *Spinaspidodera*, *Pseudaspidodera*, *Pseudaspidoderoides jnanendrae* n.g., n.comb., *Pseudaspidoderina voluptuosa* n.g., n.comb. [both transferred from *Pseudaspidodera*] and *Pseudaspidoderina longespícula* n.g., n.comb. which had been created by Maplestone as a species of *Heterakis* and then suppressed. *Heterakis* is divided into the subgenera (i) *Heterakis*, the spicules of which differ in length by at least one third the length of the smaller spicule, and (ii) *Raillietakis* n.subg. with equal or subequal spicules. Further new combinations are *Sexansodera agoutiae* [for *Aspidodera binansata* var. *agoutiae* Cameron & Reesal, 1951], *Meteterakis acuticeps* and *M. brodeni* [both originally species of *Africana*]. *Heterakis paradoxa* is considered a synonym of *Ganguleterakis spumosa*. The measurements of the specimens identified by Yamaguti as *Spinicauda japonica* in 1941 suggest that his specimens contained both *S. bufonis* and *S. japonica*.

M.MCK.

(515c) The planorbid *Drepanotrema anatinum* is redescribed and figured from observations based on 287 specimens collected in Governador Valadares, Minas Gerais, Brazil and is compared with *Australorbis*. The shells labelled *Spiralina nigella* in the Lutz collection at the Instituto Oswaldo Cruz are indistinguishable from *D. anatinum*.

M.MCK.

(515d) Lobato Paraense & Deslandes describe and figure the morphology and, apparently for the first time, the internal anatomy of *Drepanotrema melleum* and compare it with *D. anatinum*.

M.MCK.

516—Revista Brasileira de Malariologia e Doenças Tropicais.

- a. BARBOSA, F. S. & COELHO, M. V., 1956.—“Pesquisa de imunidade adquirida homóloga em *Australorbis glabratus*, nas infestações por *Schistosoma mansoni*.” 8 (1), 49–56. [English summary p. 55.]

(516a) Experiments on the immunity of *Australorbis glabratus* to reinfection with *Schistosoma mansoni* showed that molluscs which had been cured of infection by the desiccation method described by Barbosa & Coelho [for abstract see Helm. Abs., 22, No. 637f], or those with unisexual infections, were easily reinfected with miracidia of the same strain, leading to bisexual infections. The blood of infected or cured snails had no detectable effect on the miracidia. In snails already infected, the penetrating miracidia were sometimes found in a state of disintegration surrounded by intense cellular reaction, but this was rarely observed in uninfected or cured snails.

M.MCK.

tertagi in cattle, *O. circumcincta* and *O. trifurcata* in sheep and goats, *Trichostrongylus capricola* in goats, and *Haemonchus contortus* and *T. extenuatus* in all three species of hosts. M.MCK.

(501c) When applied to guinea-pigs infected with single doses of 200 to 300 embryonated eggs of *Neoscaris vitulorum*, Thorn's test was positive in all of seven animals injected with a single dose of 6 mg. of ACTH and in three out of six animals injected three times with 4 mg. at intervals of four hours. The results were negative in guinea-pigs which had received three doses of 2 mg. at intervals of four hours, or single doses of 2 mg. or 4 mg. M.MCK.

02—Queensland Agricultural Journal.

- a. MOULE, G. R., 1956.—“The occurrence and control of worm parasites of sheep in Queensland.” 82 (12), 693–698.

03—Record of Investigations. Department of Agriculture, Uganda.

- a. TROUGHT, T. E. T., 1956.—“Preliminary tobacco eelworm investigations, Uganda, 1952–1954.” No. 4, pp. 73–87.

(503a) Root-knot nematodes (*Meloidogyne* spp.) are present throughout the tobacco-growing areas of Uganda. The effect of D-D mixture as a soil fumigant was tried in five 4×4 Latin squares. In seed-beds the D-D was applied as spot injections of 6 c.c. at a depth of 9 in. and spaced 12 in. apart each way followed by thorough watering. The seed was sown 7 days later. In field plots three injections of 6 c.c. each were given at each transplant site, each injection 8 in. from the centre of the site. In the seed-beds fumigation reduced the infestation of the seedlings and gave an increased stand and 75% increase in green leaf yield. Fumigation of field sites did not significantly increase the yield of tobacco in four of the Latin squares but in the fifth there was an increase significant at the 5% level. The growth of five-week-old seedlings, as measured by the width of the widest leaf, was reduced by up to 26% by a heavy infestation of root-knot. D-D did not increase the growth, as measured by plant height, of *Crotalaria juncea*, a resistant plant. In pot tests, high resistance to root-knot was shown by ground nut (*Arachis hypogaea*) var. B.227, the cereals bulo, sorghum and maize and the grasses *Panicum maximum* and *Chloris gayana*. It is suggested that a rotation including these plants for a period would practically eliminate root-knot. Seven varieties of tobacco showed no resistance to infestation. Injections of seed-beds at various sites were unsatisfactory as close supervision and the high standards of care of the seed-beds necessary were not attainable. M.T.F.

04—Recueil de Médecine Vétérinaire.

- a. STEFANSKI, W., 1956.—“Rôle des parasites dans la transmission des maladies infectieuses du porc.” 132 (8), 585–593.
- b. GUILHON, J., 1956.—“Recherches sur le traitement spécifique de la dicrocoeliose ovine.” 132 (10), 733–749.

(504a) Stefanski discusses published data on the role of parasites in the transmission of infectious diseases in animals, especially the pig, and summarizes his own experiments on the possible transmission of swine erysipelas by *Ascaris* and *Oesophagostomum* or, more probably, by Strongyloides. [A fuller account of this work is given in *Acta Parasit. Polonica*, 1956, 4, 521–554. For abstract see No. 330d above.] S.W.

(504b) Guilhon has tested 40 chemicals or chemical mixtures against *Dicrocoelium dendriticum* in sheep. These included male fern extract, hexylresorcinol, antimony compounds, halogenated hydrocarbons, methylene blue and derivatives of triphenylmethane, thiazine, phthalein, acridine, phenol and thiazine. The numbers of sheep used in each test varied from eight to 48 and the results are tabulated under dosage, duration of treatment, method of administration, and effect on the flukes, on their eggs and on the sheep. None, including three proprietary anthelmintics supposedly specific against *D. dendriticum* (Dicrolan, Melminthi and Dirostomine) were effective at dosage levels harmless to the sheep. Two of

the mixtures which were toxic to the flukes, namely male fern extract with hexachlorethra crystal violet and sodium tetraiodophenolphthalein, and phenylquinolinic carboxylic acid with crystal violet and the oxymethylamide of pyridine carboxylic acid, both killed the she

505—Refuah Veterinarith. Jerusalem.

- a. SULMAN, F. G., 1956.—[Diseases transmitted from dog to man.] 13 (2), 53–63. [In Hebrew. English summary pp. 101–102.]
- b. NOBEL, T. A., 1956.—[Histopathology of paramphistomiasis.] 13 (4), 155–157. [In Hebrew. English version pp. 204–206.]

(505a) Sulman tabulates the 56 diseases transmissible from dogs to man of which the only are shown in Israel. These, in order of importance, are rabies, leptospirosis and echinococcosis. Dracontiasis and *Heterophyes* infection are entered as doubtful.

(505b) Outbreaks of acute paramphistomiasis occur in cattle annually during May and June in the marshy area of the Hadera district of Israel. Histopathological examination revealed immature flukes in the intestine, where they were free in the lumen of the duodenum and jejunum or deeply embedded in the mucosa and sub-mucosa. Fewer parasites occurred in the ileum. The action of the immature flukes is mechanical and toxic. The gut function is impaired when numbers are embedded in the gut wall and scouring and emaciation result. The toxic action is indicated by the presence of eosinophils and plasma cells and by the oedema and anaemia. No lesions were associated with the presence of adult forms.

506—Report. East African Medical Survey and Research Institute.

- a. HOLMES, E. G., 1956.—“Annual report, July 1955–June, 1956.” Year 1955–56, 33 pp.

(506a) In this report the research programmes of Jordan on filariasis on Ukara Island in Lake Victoria and of McClelland at Mwanza on Lake Victoria on the vectors of schistosomiasis haematobia and their ecology and control are briefly outlined.

507—Report. East African Veterinary Research Organization.

- a. DINNIK, J. A. & DINNIK, N. N., 1956.—“Systematics, distribution and life-histories of stomach flukes.” Year 1955–56, pp. 35–39.

(507a) The occurrence in cattle in Uganda of *Paramphistomum microbothrium*, *P. sukan*, *Calicophoron raja*, *Cotylophoron cotylophorum* and *C. jacksoni* is reported. *Fasciola gigantica* is wide-spread throughout East Africa and causes considerable losses while *F. hepatica* is sporadic in the Highlands of Kenya. The life-cycle of *F. gigantica*, first recorded by Portier in South Africa, was confirmed in laboratory-bred *Limnaea natalensis caillaudi*. The first emergence of cercariae occurred 35 days after infection and infected snails survived under laboratory conditions for 202 days. In experimentally infected cattle, eggs first appeared in 100 days. *Limnaea n. nyansae* common in Lake Victoria and the upper part of the Victoria Nile and *L. exserta* from the Victoria Nile were also experimentally infected but not *Bulinus tropicus alluaudi*. *L. n. caillaudi* was resistant to infection with *F. hepatica*. Probably *L. mueruensis* is the only vector of *F. hepatica* in the Highlands of Kenya.

508—Report of the Florida Agricultural Experiment Stations.

- a. CHRISTIE, J. R., 1956.—“Identity and distribution of soil nematodes.” Year 1955–56, pp. 86–87.
- b. CHRISTIE, J. R., 1956.—“Influence of soil management practices on nematodes in Florida soils.” Year 1955–56, p. 87.
- c. KERR, S. H. & CHRISTIE, J. R., 1956.—“Nematode studies and control on ornamental foliage plants.” Year 1955–56, p. 87.
- d. MILLER, H. N., 1956.—“Nematode studies and control on ornamental foliage plants.” Year 1955–56, p. 116.

516—Revista Brasileira de Malariologia e Doenças Tropicais (cont.)

- k. ANDRADE, R. M. DE & MARTINS, R. S., 1956.—“Contribuição para o conhecimento dos criadouros de planorbíneos no Distrito Federal: II. Resultado geral das pesquisas efetuadas para a localização de focos de transmissão da esquistossomose mansoni.” 8 (2), 379–385. [English summary p. 383.]
- l. ANDRADE, R. M. DE, 1956.—“Nota sobre a campanha contra a esquistossomose mansoni em algumas localidades no Vale do Alto Rio Doce, Minas Gerais (Brasil).” 8 (2), 387–390. [English summary p. 389.]
- m. PAULINI, E., 1956.—“Da aplicação de moluscocidas: I. Um dispositivo simples para a aplicação de moluscocida sólido.” 8 (2), 391–395. [English summary p. 394.]
- n. PELLEGRINO, J. & NUNES, R. M. B., 1956.—“Técnica de obtenção de cercárias desidratadas de *Schistosoma mansoni* para o preparo de antígenos.” 8 (2), 397–404. [English summary p. 403.]

(516k) When 6,470 potential breeding places of snails were surveyed in 37 districts of Rio de Janeiro, Brazil, *Schistosoma mansoni* was found in two *Australorbis tenagophilus* from Barros Filho and 80 *A. immunis* (= *A. confusus*) from the districts of Jacarêpaguá, Madureira, Mangueiros and Oswaldo Cruz. The other molluscan species identified were *A. glabratus* and *A. bahiensis* (= *Planorbis nigricans* Spix).
M.MCK.

(516l) Andrade tabulates the densities of *Australorbis glabratus* in nine localities in the valley of the upper river Doce, Minas Gerais, Brazil, and the lengths and areas of waters treated with copper sulphate in 19 localities there. The first applications were made with pumps at an average dosage of 42.1 gm. per sq.m. to give concentrations of 1:1,000. The 100 m. stretches which were still infested with snails (constituting 11% of the waterways originally treated) were treated again with 10 gm. “bullets” of copper sulphate thrown on to the water and the average dosage was 28.4 gm. per sq.m.
R.T.L.

(516m) Paulini has devised a cheap apparatus which ensures the uniform delivery of solid molluscicides into running water. This consists of a cylinder 45 cm. in length and 20 cm. in diameter into which a metal sieve (mesh No. 16 of the U.S. Standard Sieve) is soldered 3 cm. above the base. For copper sulphate the metal should be copper and for sodium pentachlorophenate galvanized iron may be used. In addition, three sheet metal funnels each with a maximum diameter of 20 cm. and minimum diameters of 10 cm., 13 cm. and 16 cm. are provided. By standing one or other of these on the sieve the actual area of the sieve on which the molluscicide is put can be restricted, thus reducing the amount of molluscicide coming into contact with the water and thereby reducing the rate of its solution. The cylinder, with or without one of the funnels in place, is stood on a tripod in the water with the sieve 2.5 cm. or 5 cm. below the water level. The apparatus will hold 20 kg. of copper sulphate crystals. When 5 kg. of copper sulphate were placed in the cylinder without a funnel and submerged 2.5 cm. the rate of solution was 40 gm. per minute when crystals “1–150 m/m” in size were used and 30 gm. per minute when tablets “20 m/m” in size were used. 5 kg. of sodium pentachlorophenate placed in the smallest funnel and submerged 2.5 cm. dissolved at the rates of 9 gm. per minute if granulated, and 3 gm. per minute if powdered. Speed of water flow had little effect on the rate of solution.
M.MCK.

(516n) Dried cercariae of *Schistosoma mansoni* were obtained for the preparation of antigen as follows. The initial cercarial suspension was strained through gauze and then through a 350 ml. Büchner funnel (of maximum pore diameter 14 μ) until a concentration of 1,000–2,000 cercariae per ml. was reached. The suspension was transferred to conical flasks and sedimented at 6°C., at which temperature the cercariae remained alive and infective, and the supernatant fluid was removed through a pipette attached to a vacuum line. The remaining 0.5–1.0 ml. of cercarial sediment was transferred with a drop-counter into a small beaker, frozen over dry ice and dried in a partial vacuum in the presence of calcium chloride. The powder was then sealed under vacuum in ampoules and kept in a refrigerator. From 14,371 infected *Australorbis glabratus*, 634.1 mg. of dried cercariae were obtained after this concentration procedure had been repeated 25 times.
M.MCK.

516—*Revista Brasileira de Malariologia e Doenças Tropicais* (cont.)

- o. AGUIRRE, G. H., SERAPHIM, E. M., BARBOSA, J. A. & RACHOU, R. G., 1956.—“Um foco de filariose bancroftiana em Castro Alves, Estado da Bahia.” 8 (3), 433-435. [English summary p. 435.]
- p. LACERDA, N. B. & RACHOU, R. G., 1956.—“Filariose humanas nas sedes municipais do Estado do Amazonas e dos territórios do Acre, Guaporé e Rio Branco.” 8 (3), 437-442. [English summary pp. 439-440.]
- q. PAULINI, E., 1956.—“Da aplicação de moluscocidas: II. Preparo de tijolos de pentaclorofenato de sódio.” 8 (3), 491-492. [English summary p. 492.]
- r. PELLEGRINO, J. & MACEDO, D. G., 1956.—“Novo critério de leitura da reação intradérmica na esquistossomose.” 8 (3), 499-509. [English summary p. 507.]
- s. BRENER, Z. & MOURÃO, O. G., 1956.—“Observações sobre a forma hepato-esplênica da esquistossomose mansoni em Minas Gerais.” 8 (3), 511-517. [English summary p. 516.]
- t. BRENER, Z. & MOURÃO, O. G., 1956.—“Inquéritos clínico-epidemiológicos em focos endêmicos de esquistossomose mansoni em Minas Gerais.” 8 (3), 519-526. [English summary p. 525.]

(516o) *Wuchereria bancrofti* was found in the night blood of 5.9% of 1,920 people examined in Castro Alves, Bahia. This is one of the highest incidences recorded in Brazil. 3.9% of 663 females of *Culex pipiens fatigans* in the area were found infected. M.MCK.

(516p) In the surveys made in the State of Amazonas, Brazil from 1952 to 1954, microfilariae of *Mansonella ozzardi* were present in 2.5% of 25,716 persons and those of *Wuchereria bancrofti* in 0.1%. The areas most infected with *M. ozzardi* appeared to be the valleys of the River Solimoes and upper River Negro. Only Manaus can be considered a focus of filariasis bancrofti and the infection rate is very low. In the territories of Acre, Guaporé and Rio Branco very few persons were found with filarial infections and all were imported cases. M.MCK.

(516q) Bricks of sodium pentachlorophenate for use as a molluscicide were prepared from a mixture of 250 parts by weight of the powdered chemical with 60 parts by weight of water which was beaten into moulds measuring 11 cm. × 7 cm. × 4 cm. (Workers preparing these blocks should wear gloves.) The blocks were allowed to dry for 24 or 48 hours and kept in a dry ventilated place for ten to fifteen days. In one field trial eight of these bricks were placed, one per hour, in a water current of 5 cm. per second and 29 cu.m. per hour (pH 6.4). Each dissolved in two-and-a-half to four hours. The calculated concentration was 10 p.p.m. and the observed concentration 10 p.p.m. to 15 p.p.m. In a second trial the observed concentration was 5 p.p.m. to 11 p.p.m. as compared with the calculated value of 25 p.p.m. and this was attributed to the presence of marshy ground between the sites of application and of sampling. M.MCK.

(516r) A method is described for comparing and interpreting skin reactions to schistosome antigen. The perimeter of the wheal is marked out with ink 15 minutes after the injection and an imprint is transferred to moist blotting paper. The area enclosed by the imprint is measured. The authors injected each of several hundred persons infected with *Schistosoma mansoni*, and some uninfected persons, with 0.05 c.c. of antigen of concentrations 10^{-3} to 10^{-7} and classified the reactions as negative for areas of 0.9 sq.cm. or less, doubtful for areas of 1.0 sq.cm. to 1.1 sq.cm. and positive for areas of 1.2 sq.cm. or more. They obtained the greatest proportion of positives using antigen of concentration 10^{-3} . M.MCK.

(516s) The study of 93 patients from Minas Gerais, Brazil, who had schistosomiasis mansoni and enlargement of the spleen, showed that splenomegaly probably appeared early and developed slowly. Slight splenomegaly was very common. M.MCK.

(516t) Among inhabitants of five localities endemic for *Schistosoma mansoni* in Minas Gerais, Brazil, the incidences of infection as determined by single faecal examinations by the method of Hoffman, Pons & Janer were: 36.1% of 689 individuals; 48.1% of 305; 40.5% of 296; 93.9% of 730 (at Tuparecê) and 28.8% out of 458. *Australorbis glabratus* was the vector always found. Brener & Mourão gained the impression that the seriousness of the disease,

516—Revista Brasileira de Malariologia e Doenças Tropicais (cont.)

- u. PELLEGRINO, J., PAULINI, E., POMPEU MEMÓRIA, J. M. & MACEDO, D. G., 1956.—“A reação intradérmica, na esquistossomose, com uma fração polissacarídea isolada de cercárias de *Schistosoma mansoni*.” 8 (3), 527–534. [English summary p. 533.]
- v. PAULINI, E., 1956.—“Algumas considerações sobre o modo de ação dos moluscocidas.” 8 (4), 545–549. [English summary p. 549.]
- w. PAULINI, E. & PELLEGRINO, J., 1956.—“Observações sobre a biologia no *Australorbis glabratus*. I. Influência da infestação pelo *Schistosoma mansoni* sobre a susceptibilidade ao pentaclorofenato de sódio.” 8 (4), 551–554. [English summary p. 553.]
- x. BRENER, Z., 1956.—“Observações sobre a infecção do camundongo pelo *Schistosoma mansoni*.” 8 (4), 565–575. [English summary pp. 573–574.]

as represented by the proportion of hepato-splenic cases, was strictly dependent on local conditions, but these could not be determined from their observations. It appeared that there was greater liver involvement in the children than in the adults with the hepato-intestinal form of the disease.

M.MCK.

(516u) Antigen was prepared from a polysaccharide fraction of *Schistosoma mansoni* cercariae which had been isolated according to Fuller's technique as modified by Muniz & Freitas and shown to be free of reducing substances. It was injected intradermally at different concentrations into 50 adults with *S. mansoni* infections who also received equivalent injections of whole antigen. The average area of the wheals produced by each concentration of antigen was smaller when the polysaccharide antigen was used than when whole antigen was employed, suggesting that the polysaccharide fraction was not the only active portion of the antigen. A linear relationship was found between the logarithm of the concentration of total antigen and the area of wheal it produced.

M.MCK.

(516v) From a logarithmic analysis of the results published by Hoffman & Zakhary and by Perlowagora-Szomlewicz & Oliveira Dias on the relation between concentrations of molluscicides and times of lethal exposure [for abstracts see Helm. Abs., 22, No. 7n and 24, No. 642a], Paulini shows that there is a critical concentration below which a large increase in concentration is necessary to bring about a large decrease in the lethal exposure time and above which, a small increase in concentration is reflected by a large decrease in lethal exposure time. The critical concentration of sodium pentachlorophenate is 160 p.p.m. when it acts on *Australorbis immunis* and that of copper sulphate is 10 p.p.m. when it acts on *A. immunis* and 55 p.p.m. when it acts on *Biomphalaria boissyi*. The logarithmic equations which Paulini derives are shown to be similar to Freundlich's equation and Danon's equation relating to adsorption and Paulini infers that intoxication is brought about by adsorption and that retraction of the snails and secretion of mucus have no apparent influence on the over-all biological effect.

M.MCK.

(516w) When *Australorbis glabratus* naturally infected with *Schistosoma mansoni* were exposed, in the laboratory, for four hours to flowing water containing 60 p.p.m. to 160 p.p.m. of sodium pentachlorophenate the mortality was 88.7% (94 snails out of 106) after 72 hours as compared with a mortality of 47.9% (45 out of 94) in uninfected controls.

M.MCK.

(516x) In mice infected with 200 cercariae of *Schistosoma mansoni* per mouse, a single immature egg was found in the liver on the 34th day, eggs were seen in the intestine on the 36th day and were voided in the faeces from the 43rd day but were consistently few. In the liver, granulomata were observed from the 40th day and exceeded the number of free eggs by the 60th day. Live miracidia were usually present in the granulomata, which often contained eggs in different stages of development. Granulomata were not numerous in the ileum until the 70th day when hepatic fibrosis was already greatly developed.

M.MCK.

516—Revista Brasileira de Malariologia e Doenças Tropicais (cont.)

- y. BRENER, Z., PELLEGRINO, J. & OLIVEIRA, F. C., 1956.—“Terapêutica experimental da esquistossomose mansoni. Aplicação do método de isolamento de granulomas do fígado de camundongos.” 8 (4), 583–587. [English summary p. 586.]
- z. PELLEGRINO, J. & SIQUEIRA, A. F., 1956.—“Técnica de perfusão para colheita de *Schistosoma mansoni* em coelbas experimentalmente infestadas.” 8 (4), 589–597. [English summary p. 596.]
- ba. BRENER, Z. & CHIARI, E., 1956.—“Considerações sobre o diagnóstico da esquistossomose mansoni pelo exame coprológico com o método de Hoffman, Pons e Janer.” 8 (4), 599–603. [English summary p. 603.]
- bb. CHAIA, G., PAULINI, E. & QUEIROZ, A. B., 1956.—“Ação do pentachlorofenato de sódio e do sulfato de cobre sobre os ovos de *Australorbis glabratus* (Say).” 8 (4), 605–612. [English summary p. 607.]

(516y) Beginning on the 31st day after seven mice had been heavily infected with *Schistosoma mansoni* they were intraperitoneally injected with foudadin at the rate of 125 mg. per kg. body-weight, twice a day, for five days. The therapeutic efficacy was evaluated 54 days after infection by isolating granulomata from the liver using the method of Pellegrino & Brener [for abstract see No. 446b above.]. A few live worms were found in all the treated mice and 36 granulomata were recovered, but only from one mouse. 15,941 granulomata were recovered from ten untreated controls. M.MCK.

(516z) Pellegrino & Siqueira recommend the following modifications of Ruiz's perfusion method for collecting *Schistosoma mansoni* from guinea-pigs [for abstract see Helm. Abs., 21, No. 740a]: (i) 15 mg.–20 mg. of heparin are injected into the heart 15 minutes before killing the animal; (ii) by inserting the perfusion tube into the inferior vena cava instead of the hepatic sinus a more even distribution of the perfusion liquid in the liver is obtained; (iii) a solution of 4% gum arabic in physiological saline is used to perfuse the mesentery; this limits the passage of excess liquid into the stomach and intestines and thus avoids the danger of rupturing them; (iv) intestines and mesentery are floated in saline to prevent the formation of angles in the intestine during the perfusion. Almost all the worms in the liver and a large percentage of those in the mesentery (altogether 96.2% of those in 38 heavily infected guinea-pigs) were recovered. M.MCK.

(516ba) The faeces in 50 cases of *Schistosoma mansoni* infection were concentrated by the method of Hoffman, Pons & Janer and examined by scanning (i) five slides from one portion of faeces, (ii) five slides of different portions of the same faeces and (iii) five slides, one on each of five days. About the same numbers of positive cases were obtained by the three methods, i.e. 41 by the first method, 40 by the second method and 39 by the third method. Each of the techniques detected 26 cases by the first slide and few additional cases after the second slide. M.MCK.

(516bb) Exposures for six hours were required, in the laboratory, for sodium pentachlorophenate at 20 p.p.m. or 40 p.p.m. to kill 100% of *Australorbis glabratus* eggs at 18°C. to 25.4°C. This compares favourably with the lethal exposure time for adult snails, which is 8 hours at 20 p.p.m. to 30 p.p.m. Copper sulphate was lethal to *A. glabratus* eggs only after nine hours exposure to 30 p.p.m. at 18°C. to 25°C. The adult snails are known to be killed by copper sulphate at 30 p.p.m. after two hours. Chaia *et al.* recommend that field applications of molluscicides should take into account the exposure time lethal to the eggs. Sodium pentachlorophenate appears to be more efficient than copper sulphate because its exposure times are more nearly equal for killing the adults and eggs and because the concentration of copper sulphate diminishes rapidly in the field after application. M.MCK.

517—Revista de la Facultad de Medicina Veterinaria. Lima.

- a. RAKOWER, C., M. & CASTILLO G., A., 1956.—“Estrongiloidosis canina.” Years 1952–56, 7–11, 204–208. [English summary p. 207.]

(517a) This is the second case of strongyloidiasis reported in a dog from Peru in a relatively short time (the first having been reported by Rueda Meza in 1954). M.MCK.

518—Revista Ibérica de Parasitología.

- a. LÓPEZ-NEYRA, C. R., 1956.—“Revisión de la superfamilia Filarioidea (Weinland, 1858).” **16** (1/2), 3-212.
- b. CAMPILLO, M. C. DEL, 1956.—“Denuncia en España de *Ostertagia circumcincta* (Stadelman 1894) Ransom 1907 y *Trichostrongylus vitrinus* Looss 1905, en *Ovis aries* L. de la provincia de Valladolid.” **16** (3), 253-265.
- c. SCHUURMANS STEKHOFEN, Jr., J. H., 1956.—“*Daubaylia dewiti*, n.sp. nematodo parásito de *Planorbis contortus* (L.).” **16** (3), 277-282. [French summary p. 281.]
- d. GUEVARA, D., 1956.—“Acción *in vitro* de ciertos fermentos de origen vegetal sobre nematodos parásitos.” **16** (4), 297-314. [English summary p. 313.]
- e. LÓPEZ-NEYRA, C. R., 1956.—“Revisión de la superfamilia Filarioidea (Weinland, 1858). (Final).” **16** (4), 319-331. [English summary p. 320.]

(518a) López-Neyra makes numerous modifications in the classification of the Filarioidea proposed by Wehr (1935) and Chabaud & Choquet (1953). The names Dicheilonematinae Wehr, 1935 and Dipetalonematidae Wehr, 1935 are replaced by the names Setariinae Yorke & Maplestone (1926) and Dirofiliariidae Sandground (1921). Numerous genera are transferred to other subfamilies, e.g. *Squamofilaria* from Aproctinae to Tetracheilonematinae; *Icosiella* from Stephanofilariidae to Setariinae; *Stephanofilaria* from Stephanofilariidae to Filariinae (syn. Stephanofilariidae); *Bostrichodera* from Dirofiliariinae to Dipetalonematinae; *Oswaldofilaria* from Oswaldofilariinae to Dipetalonematinae (syn. Oswaldofilariinae); *Elaeophora*, *Wehrdikmansia* and *Onchocerca* from Onchocercinae to Dipetalonematinae (syn. Onchocercinae). The genera *Molinema*, *Parachandlerella* and *Vagrifilaria* are re-established, the latter being transferred to Aproctinae. The following genera are synonymized: *Spirofilaria* with *Pelicitus*; *Lissonema* with *Aprocta*; *Hyracofilaria* and *Neurofilaria* with *Setaria*; *Paramicipsella* with *Squamofilaria*; and *Parlitomosa* with *Dipetalonema*. Two new subfamilies are proposed in Dirofiliariidae: (i) Lemdaniinae characterized by a short tail and similar spicules contains the following genera, *Lemdana*, *Protofilaria*, *Pseudofilaria*, *Cordophilus*, *Paralemdana*, *Paraprocta*, *Aproctiana*, *Alcefilaria*, *Paronchocerca* and *Aproctoides*. (ii) Eufilariinae characterized by a short, non-alate tail and markedly dissimilar spicules contains the following genera: *Eufilaria*, *Saurositus*, *Pseudothamugadia* n.g. (for *Thamugadia physignathe* Johnston, 1912), *Conispiculum*, *Piratuba*, *Anenteronema*, *Carinema*, *Sarconema*, *Aproctiella*, *Skrjabinoceta* and *Ornithofilaria*. The genus *Diplotrriaena* is divided into the two groups Euryanisospiculum and Stenoanisospiculum but the taxonomic status of these names is not indicated. A few of the combinations and synonymies indicated as appearing for the first time seem to be new, e.g. *Diplotrriaena nipponensis* as a synonym of *D. nocti*; *Filaria conepti* as a synonym of *F. martis*; *Mf. ochmanni* and *Dirofilaria repens* as synonyms of *D. conjunctivae*; *Eufilaria micropennis* (Travassos, 1926) n.comb. for *Lemdana micropennis*; *Squamofilaria australis* (Johnston & Mawson, 1942) n.comb. for *Vagrifilaria australis*; *Squamofilaria lepidogrammi* (Tubangui & Masiluñgan, 1937) n.comb. for *Chandlerella lepidogrammi*; *Aproctiana orbitalis* (Linstow, 1901) n.comb. for *Aprocta orbitalis*. Keys are given to families, subfamilies and genera and the important dimensions are tabulated of the species of *Diplotrriaena*, *Squamofilaria*, *Hamatospiculum*, *Aprocta*, *Foleyella*, *Dirofilaria* and *Litomosoides*. R.A.

(518b) The presence in Spain for the first time of *Ostertagia circumcincta* and *Trichostrongylus vitrinus* is recorded in sheep from the province of Valladolid. Detailed measurements of these species recorded by Campillo and several previous workers are tabulated. M.MCK.

(518c) Schuurmans Stekhoven describes adults and larvae of *Daubaylia dewiti* n.sp. from *Planorbis contortus* in Holland. As compared with *D. potomaca* [from *P. trivolvis* in the U.S.A.] its lips are more marked and the head is distinctly separated from the body by a groove. Further differences are stated to lie in the structure of the male armature, the greater width of the female tail, the appearance, in certain views, of some kind of cloacal bursa and the presence of a fourth pair of pre-cloacal papillae. M.MCK.

(518d) The caecal nematodes, *Heterakis gallinae* and *Subulura brumpti*, of poultry are more vulnerable to *Ficus carica* latex than *Ascaridia galli*. Results of experiments with the latex and with the commercial product vermizym, which has a papain base, are tabulated. Suspensions of the latex lost their activity in a few days but were preserved for at least 67 days,

at laboratory temperatures, by the addition of merthiolate 1:10,000 and to a lesser degree by 1% of sodium benzoate. R.T.L.

(518e) The names and synonyms of the genera and species in López-Neyra's Revision of the Filarioidea [see No. 518a above] are listed alphabetically. R.T.L.

519—Revista do Instituto Adolfo Lutz. São Paulo.

- a. CORRÊA, M. O. A. & AMATO NETO, V., 1956.—"Tratamento da esquistossomíase mansônica por via oral: resultados obtidos com o emprego do cloridrato de miracil D (esquema de 20 dias) e do óxido estanhoso." **16**, 74-77. [English summary p. 77.]
- b. CARVALHO, J. C., 1956.—"*Helicotylenchus nannus* (descrição do macho) e *Rotylenchus iperoiguensis* n.sp." **16**, 136-141. [Also in English pp. 142-147.]
- c. CARVALHO, J. C., 1956.—"*Mononchus coronatus* n.sp. (Nematoda, Mononchidae)." **16**, 148-150. [Also in English pp. 151-153.]

(519a) Miracil-D was administered to nine schistosomiasis *mansoni* patients at the rate of two or three tablets (each containing 200 mg.) per day for 20 days. Two similar patients received eight tablets containing 0.5 gm. of stannous oxide per day for three periods of eight days separated by rest periods of a week. *Schistosoma mansoni* eggs continued to be passed in the faeces of all the patients. M.MCK.

(519b) The male of *Helicotylenchus nannus* is described and figured for the first time. The head has four or five annules, the orifice of the dorsal oesophageal gland lies well behind the spear base, the tail is relatively short and surrounded by a bursa and the phasmids are small and pre-anal. *Rotylenchus iperoiguensis* n.sp. is also described and figured. It is characterized by the head not being offset and by the presence of spermathecae in the female. The phasmids are post-anal and the bursa surrounds the tail. Both species were found in São Paulo, Brazil. J.B.G.

(519c) *Mononchus coronatus* n.sp. is described and figured. It is characterized by a crown-like elevation of the lip region and by the single, short, prodelphic ovary. It is placed in the subgenus *Prionchulus*. Only the female was found. J.B.G.

520—Revista del Instituto de Salubridad y Enfermedades Tropicales. Mexico.

- a. MAZZOTTI, L., 1956.—"El moldeado de la piel como una ayuda en la interpretación de pruebas alérgicas." **16** (1), 15-18. [English summary p. 18.]
- b. MAZZOTTI, L. & MÉNDEZ, D., 1956.—"El difentano 70 en el tratamiento de las teniasis humanas." **16** (2), 9-14. [English summary p. 13.]
- c. MARTÍNEZ BÁEZ, M. & MAZZOTTI, L., 1956.—"Métodos sencillos para obtener fotografías de preparaciones de helmintos." **16** (2), 25-26.
- d. MAZZOTTI, L., RUIZ SOTO, R. & RAMÍREZ, J., 1956.—"Estudios sobre *Fasciola hepatica*. I. Incidencia en animales sacrificados, en varias regiones de México." **16** (3), 27-32. [English summary p. 29.]
- e. LÓPEZ RICO, A., LOYO DÍAZ, C. & RETALOZA DÍAZ, T., 1956.—"Tetracloretileno sin purgante en la terapéutica entihelmíntica (estudio de 534 casos)." **16** (3), 59-63. [English summary p. 61.]
- f. MAZZOTTI, L., 1956.—"*Lymnaea humilis* (Say), huésped intermediario de *Fasciola hepatica*." **16** (4), 21-23. [English summary p. 23.]
- g. MARKELL, E. K. & CHÁVEZ NÚÑEZ, M., 1956.—"Infecciones por parasitismo intestinal entre los habitantes de una finca de café y de un ejido en Chiapas, México." **16** (4), 43-49. [English summary p. 48.]

(520a) Mazzotti describes a method of preparing plaster of Paris casts of the wheals produced by cutaneous antigen tests. By this procedure the wheals produced at different stages of a helminthic infection can be compared. Further, tests can be made in remote localities as the casts can be sent to an expert for interpretation. M.MCK.

(520b) Forty-nine patients with *Taenia solium* and *T. saginata* infections were treated with a single dose of 0.75 gm. to 12.75 gm. (46 mg. to 250 mg. per kg. body-weight) of Diphenthane 70, given on an empty stomach. 34 of the patients were negative after three

months. Although three of those who had received 200–250 mg. per kg. suffered from toxic effects including weakness, increased pulse rate and headache, Goodloe (personal communication) has administered 200 mg. per kg. to adults, divided into doses of 1 gm. every four hours, without, apparently, toxic effect. M.MCK.

(520c) Mounted and cleared specimens of helminths, the features of which are visible under low power or without magnification, can be photographed by placing the slide containing the specimen in direct contact with a contrast film and exposed momentarily to a source of light. The negative thus produced can be used to make a positive or an enlargement. M.MCK.

(520d) Mazzotti *et al.* tabulate the incidence of *Fasciola hepatica* observed in abattoirs in most of the State capitals of Mexico during the period 1950–54. The incidence was higher in cattle than in sheep. In several places the incidence in cattle exceeded 20%. Although the parasite is found almost everywhere in Mexico, the State of Yucatán appears to be free of infection. The authors list the common names used for fascioliasis in different parts of that country. M.MCK.

(520e) 534 hookworm patients (none of whom weighed less than 10 kg.) received 0.08 c.c. of tetrachlorethylene per kg. body-weight on consecutive Saturdays, until they were cured. The maximum weekly dose was 5 c.c. 90.3% were negative after three treatments. Patients consumed a soft meal without fat on the previous day and ate no food that evening, the drug being administered the next day on an empty stomach without a purge. The treatment was well tolerated. M.MCK.

(520f) Specimens of *Limnaea humilis*, found in Sonora State in Mexico, were reared in the laboratory and exposed to miracidia of *Fasciola hepatica*. As 17 of 238 specimens were found infected two months after the exposure, and 14 of these harboured cercariae, *L. humilis* can now be included with *L. attenuata* and *L. obrussa* as a vector of *F. hepatica* in Mexico. M.MCK.

(520g) Markell & Chávez Núñez tabulate the parasitic infections found by faecal examinations of 115 persons on a coffee plantation in Chiapas State, Mexico, and of 83 Indians from a mountain village nearby. Both groups were heavily parasitized. The smaller number of *Strongyloides* and hookworm infections found in the village are attributed to the cooler and drier climate there. M.MCK.

521—Revista Kuba de Medicina Tropical y Parasitología.

- a. MAZZOTTI, L., 1956.—“Diagnóstico de la oxyuriasis.” 12 (1/6), 1–3.
- b. BASNUEVO, J. G., LABOURDETTE, J. M. & GARCÍA FAES, O., 1956.—“Tricocefaliasis. El insólito caso de la niña P.” 12 (1/6), 22–27, 49. [English summary pp. 27, 49.]
- c. BASNUEVO, J. G., 1956.—“Tricocefaliasis.” 12 (1/6), 28–31.
- d. BASNUEVO, J. G., 1956.—“Uncinariasis.” 12 (1/6), 32–35.
- e. BASNUEVO, J. G., 1956.—“Ascariasis.” 12 (1/6), 35–37.
- f. BASNUEVO, J. G., 1956.—“Enterobiasis u oxyuriasis.” 12 (1/6), 38–40.
- g. BASNUEVO, J. G., 1956.—“Strongyloidiasis.” 12 (1/6), 40–43.
- h. BASNUEVO, J. G., 1956.—“Un nuevo tratamiento de la taeniasis.” 12 (1/6), 43–45. [English summary pp. 44–45.]
- i. BASNUEVO, J. G. & CARRODEGUAS, L., 1956.—“Cuál es su diagnóstico? Quiste hidático del pulmón.” 12 (1/6), 50.
- j. BASNUEVO, J. G. & FIGARES, E., 1956.—“Diagnóstico y tratamiento del síndrome disenterico por *Trichuris trichiura*, por *Endamoeba histolytica* y por *Balantidium coli*.” 12 (7/12), 60–67. [English summary p. 65.]
- k. BASNUEVO, J. G., 1956.—“Prophylaxis of the tropical and parasitic diseases most frequent in Cuba.” 12 (7/12), 69–74.

(521b) In an emaciated child, with bloody diarrhoea containing large numbers of *Trichuris* eggs, over 80 male and female worms were detached from the prolapsed rectum. Enemas of colloidal hexylresorcinol in gum arabic solution were given over a period of about ten weeks and about eight thousand worms were voided. M.MCK.

(521c) Basnuevo reviews the treatment of *Trichuris* infections with various proprietary products. M.MCK.

(521d) *Necator americanus* is the main cause of hookworm disease in Cuba, but in the province of Pinar del Río, *Ancylostoma duodenale* is usually associated with it. Basnuevo gives details of five proprietary anthelmintics and their mode of administration. M.MCK.

(521e) Basnuevo sets out the various dosages of piperazine salts applicable at different ages for the treatment of ascariasis. M.MCK.

(521f) The mode of administration and dosages of piperazine hexahydrate and adipate in some proprietary products are summarized. M.MCK.

(521g) Basnuevo gives details of the treatment of *Strongyloides stercoralis* infection with gentian violet administered orally, intravenously or by enema or duodenal tube. He describes, once more, his use of a solution containing methylene blue, phenol, alcohol and formalin for centrifuging and staining the larvae from the faeces. M.MCK.

(521h) Basnuevo outlines a treatment of *Taenia saginata* infections with a mixture of hexylresorcinol and tetrachlorethylene given by duodenal tube or by capsule with the addition of chenopodium. For very young children, however, tablets of powdered tin and its protoxide and chloride are recommended. [This article appeared in *Revista Cubana de Terapéutica*, 1 (1), 13.] M.MCK.

522—Revista de Medicina Experimental. Lima.

- a. GONZALES-MUGABURU, L., 1956.—“Encuesta de parásitos intestinales en 615 escolares del Rimac.” 10 (2), 147–152. [English summary pp. 151–152.]
- b. GONZALES-MUGABURU, L. & PARRA, B., 1956.—“Nota sobre hallazgo de algunos helmintos en la vicuña (*Vicugna vicugna*).” 10 (2), 153–154. [English summary p. 154.]
- c. SANTILLANA, E., 1956.—“Encuesta de helmintos intestinales en la provincia de Sandía (Departamento de Puno).” 10 (2), 155–165. [English summary p. 163.]

(522a) Single faecal samples obtained by concentration from each of 615 schoolchildren from Rimac, Peru, showed infections of *Hymenolepis nana* in 166, *Taenia* sp. in one, *Ascaris lumbricoides* in 11, *Enterobius vermicularis* in 19, *Trichuris trichiura* in 95, hookworm in six, *Strongyloides stercoralis* in one and *Meloidogyne* sp. in 35. Those with hookworm and *S. stercoralis* infections had resided in the Peruvian jungle. Gonzales-Mugaburu has observed an apparent increase in the incidence of *Meloidogyne* in recent years. M.MCK.

(522b) At the autopsy of two young *Vicugna vicugna*, from the region west of Huancayo in Junín, Peru, the following were recovered apparently for the first time from this host: *Fasciola hepatica*, *Trichuris ovis*, *Oesophagostomum venulosum* and *Chabertia ovina*. On a previous occasion a cyst found in the lung of an immature captive *Vicugna* in Lima was fed to a dog from which 450 *Echinococcus granulosus* were recovered later. M.MCK.

(522c) Of 290 persons examined by single faecal examination, 264 were positive for helminth ova in the town and province of Sandia, Department of Puno, Peru. The town has a transitory population of about 3,000 travellers per week to the plateau or jungle. Santillana found infections of *Ascaris lumbricoides* in 231, *Trichuris trichiura* in 220, hookworm in 66, *Hymenolepis nana* in 16, *Strongyloides stercoralis* in 14 and adult *Enterobius vermicularis* in six. M.MCK.

523—Revista de Medicina Veterinaria y Parasitología. Caracas.

- a. VOGELSANG, E. G. & MAYAUDON T., H., 1956.—“Observaciones sobre la habronemosis del equino en Venezuela.” 15 (1/4), 13–18. [English & German summaries p. 18.]
- b. VOGELSANG, E. G. & MAYAUDON T., H., 1956.—“Observaciones sobre parasitismo del tracto digestivo del elefante (*Elephas maximus*).” 15 (1/4), 19–22. [English & German summaries p. 22.]
- c. VOGELSANG, E. G. & MAYAUDON T., H., 1956.—“Contribución al estudio de la parasitología animal en Venezuela (XXI).” 15 (1/4), 31–34.
- d. MAYAUDON T., H. & GALLO, P., 1956.—“El adipato de piperazina en medicina veterinaria.” 15 (1/4), 55–59. [English summary p. 59.]
- e. VOGELSANG, E. G. & NARVÁEZ R., P., 1956.—“Notas de la práctica. *Setaria equina* (Abildgaard, 1789) en las meninges de un equino.” 15 (1/4), 61–62.

(523a) In Venezuela the horses which suffer most from *Habronema* infections are those of selected breeds, or those which have a thin hide or are kept in stalls. Good results have followed treatment by excision of the affected regions, autohaemotherapy for large wounds on the backs of horses or cauterization followed by dabbing with formol, phenic acid and carbon tetrachloride for small wounds. Infections have been observed in up to 50% of *Musca domestica* and up to 80% of *Stomoxys calcitrans* at the Cavalry Regiment of Maracay where 90% of the horses harbour the adult worm.

M.MCK.

(523b) In an elephant, *Elephas maximus* from India, which died in a Venezuelan circus after showing serious emaciation, oedema and diarrhoea, the following helminths were found: *Fasciola hepatica*, *F. jacksonii* and *Grammocephalus varedatus* in the liver and *Parabronema indicum*, *Bunostomum foliatum*, *Equinurba sipunculiformis*, *Murshidia murshida* and *Pfenderius papillatus* in the alimentary canal.

M.MCK.

(523c) Vogelsang & Mayaudon list, with their hosts, one species of Trematoda, three species of Cestoda and six species of Nematoda believed to be new for Venezuela. [Most of these are common forms.]

M.MCK.

(523d) The anthelmintic efficacy of piperazine adipate against intestinal helminths in ten horses, six cattle, six goats and two sheep are expressed in percentages [but no dosages are given]. In pigs which had received 200 mg. per kg. body-weight mixed with the concentrate feed, the drug was 100% effective against *Ascaris lumbricoides* and 80% effective against *Oesophagostomum dentatum*. Dogs given 250 mg. per kg. and cats which had received 150 mg. per kg. lost 100% of their ascarids and 60% of their hookworms. A dose of 300 mg. for three days eliminated 100% of *Ascaridia galli* infections in domestic fowls.

M.MCK.

(523e) The autopsy of a five-year-old horse in Venezuela which had been treated for meningitis revealed two adult *Setaria equina* between the pia mater and arachnoid of the right cerebral lobe, and one *S. equina* showing considerable mobility was located between the arachnoid and dura mater.

M.MCK.

524—Revista de Sanidad y Asistencia Social. Caracas.

- a. DÍAZ-UNGRÍA, C., 1956.—“Nematodos de Venezuela. Especies señaladas hasta la fecha.” 21 (5/6), 291–336.

(524a) Díaz-Ungría lists under hosts and under parasites the nematodes recorded from Venezuela up to 1956 and gives for each species the author, date and in some instances the habitat, and locality in Venezuela. The bibliography has 55 references.

M.MCK.

525—Revista de Sanidad e Higiene Pública. Madrid.

- a. PRADA, J. DE, 1956.—“El quiste hidatídico en Badajoz.” 30 (11/12), 798–803.

526—Revista do Serviço Especial de Saúde Pública. Rio de Janeiro.

- a. COSTA, O. R. DA, 1956.—“Contribuição ao conhecimento da filariose na Amazônia.” 8 (2), 329-422.
- b. COSTA, O. R. DA, 1956.—“Inquérito nosológico entre escolares, realizado em 4 municípios da Paraíba e em 3 de Pernambuco.” 8 (2), 423-468. [English summary pp. 435-436.]
- c. AZEVEDO, M. C. & MAROJA, R. C., 1956.—“Inquérito parasitológico entre crianças, realizado nos municípios de Ponta de Pedras e Soure—Pará.” 8 (2), 469-478. [English summary p. 478.]
- d. PELLEGRINO, J. & MACEDO, D. G., 1956.—“Novo critério de leitura da reação intradérmica na esquistossomose.” 8 (2), 543-557. [English summary pp. 554-555.]
- e. PELLEGRINO, J., PAULINI, E., POMPEU, J. M. & MACEDO, D. G., 1956.—“A reação intradérmica, na esquistossomose, com uma fração polissacarídea isolada de cercárias de *Schistosoma mansoni*.” 8 (2), 559-569. [English summary pp. 567-568.]
- f. ALBUQUERQUE NEVES, H. DE & COSTA, O. R. DA, 1956.—“Técnica para preparação de antígeno de embriões de *Wuchereria bancrofti*.” 8 (2), 571-576. [English summary p. 574.]

(526a) In this account of the findings on filariasis in the Amazon region made by the Special Service of Public Health in Brazil, Costa notes that *Mansonella ozzardi* is the filaria endemic in Amazonas State. (Only two of the *Wuchereria bancrofti* infections which have been observed there were autochthonous.) In the State of Pará, *W. bancrofti* is the endemic species. Costa reviews the morphology and biology of *M. ozzardi* and *W. bancrofti*, the incidences of these species in the Amazon region, the methods of staining and concentrating microfilariae, the treatment of the infections and the prophylactic measures applicable in Brazil. Although *M. ozzardi* infections are not usually considered pathogenic the examination of 253 individuals of whom 90 had *M. ozzardi* microfilariae suggested that the infection causes pallor, oedema, varices, sleepiness, pains in the joints and adenitis.

M.MCK.

(526b) Among 9,378 children whose faeces were examined in the States of Paraíba and Pernambuco in Brazil the incidence of intestinal helminths was 100%, or nearly 100%, in all the localities studied. The highest rate of *Schistosoma mansoni* infection was 69.7% of 412 children in the municipality of Gameleira. The incidence of hookworm ranged from 56.2% of 626 in the municipality of Esperança to 83.5% of 1,142 in that of Palonares. *Culex fatigans* and *Taeniorhynchus juxtamansonia*, vectors of *Wuchereria bancrofti*, were collected in Paraíba and Pernambuco. The planorbid found were *Planorbis centimetralis* and *P. melleum* in Paraíba and *Tropicorbis centimetralis*, *Drepanotrema cultratus*, *D. anatinum* and *D. melleum* in Pernambuco.

M.MCK.

(526c) Hookworm infection was found in 80.7%, *Ascaris lumbricoides* in 85.8%, *Trichuris trichiura* in 77.7%, *Enterobius vermicularis* in 1.3% and *Strongyloides stercoralis* in 1.2% of 1,004 children whose faeces were examined in two municipalities in the State of Para, Brazil.

M.MCK.

(526d) [This paper also appears in *Rev. bras. Malariol.*, 1956, 8, 499-509. For abstract see No. 516r above.]

(526e) [This paper also appears in *Rev. bras. Malariol.*, 1956, 3, 527-534. For abstract see No. 516u above.]

(526f) A method is described for preparing antigen from microfilariae of *Wuchereria bancrofti*. Blood containing five microfilariae or more per cu. mm. is centrifuged with sodium citrate, all but 25 c.c. containing the sediment is pipetted off, 1 c.c. of 15% saponin is added and the volume is made up to 40 c.c. with a solution of sodium citrate in saline. The sediment obtained by centrifuging is washed, pure acetone is added and then evaporated by keeping the mixture at 37°C. for 24 hours or more. The sediment is ground with calcined sand and soaked in a little Coca's solution at low temperature for 48 hours. The solid part is filtered off and stored at low temperature. Antigen is prepared by diluting with saline to the required concentration.

M.MCK.

527—Rhodesian Tobacco Journal.

- a. DAULTON, R. A. C., 1956.—“Seedbed fumigation and eelworm control.” 8 (5), 74–76.

(527a) In this report of an interview with Daulton it is stated that the Rhodesian Tobacco Research Board recommends the use of methyl bromide as a fumigant for tobacco seed-beds to control nematodes and weeds. New chemicals are being tested and search is going on for eelworm-resistant crops and grasses for rotations. Weeping Lovegrass is probably the best rotation crop. Other nematode parasites besides root-knot nematode are being investigated. It is useless to allow land to revert to natural vegetation as many weeds are hosts of nematodes. The ultimate solution of nematode problems may lie in the breeding of resistant tobacco strains.

M.T.F.

528—Rural Research in C.S.I.R.O. Melbourne.

- a. ANON., 1956.—“The nodule worm.” No. 17, pp. 7–9.
b. ANON., 1956.—“Liver fluke of sheep.” No. 17, pp. 11–16.

(528a) Nodular worm is wide-spread in Australian sheep in the higher rainfall regions of Queensland and occurs in northern and north-western New South Wales. It produces unthriftiness and lowers wool growth. By making the intestines useless for sausage casing it seriously reduces a potentially large dollar earner. Yet the maintenance of regular drenching with phenothiazine in May, June and August, the movement of the treated sheep to a paddock spelled for at least three weeks, the provision of adequate winter feed and the use of oats where possible for winter grazing would reduce losses to negligible proportions.

R.T.L.

(528b) The factors concerned in the control of *Fasciola hepatica* and its vector *Simulium subaquaticum* in Australia are outlined.

R.T.L.

529—Sborník Vysoké Školy Zemědělské a Lesnické Fakulty v Brně. Rada B. Spisy Fakulty Veterinární.

- a. VEJNAR, F., 1956.—“Příspěvek k helminthofauně našich okounovitých ryb.” 4 (3), 161–176. [German & Russian summaries p. 174.]
b. ILLÉŠ, J., 1956.—“Regionálny výskyt pľúcnych a črevných hlístic prežúvavcov i ošípaných v okolí Trenčianskej Teplice.” [Regional occurrence of pulmonary and intestinal nematodes in ruminants and pigs in the neighbourhood of Trenčianská Teplá.] 4 (4), 197–202. [German & Russian summaries p. 202.]

(529a) This is a shortened version of a 1932–33 dissertation of the Veterinary College in Brno, reporting a helminthological survey of 77 percoid fish mainly from the sea area of the Black Sea and fresh water in Czechoslovakia. Ten trematodes, three cestodes, two nematodes and two acanthocephalans were found and the following new host records made: *Perca fluviatilis* for *Rhipidocotyle illense* and *Coitocaecum testibliquum*; *Lucioperca sandra* for *Tetracotyle percae fluviatilis* and an undoubtedly accidental *Proteocephalus* sp.; *Aspro zingel* for *Bucephalus polymorphus*, *R. illense*, *C. testibliquum* and *Rhabdochona* sp.; and *Acerina schraetzer* for *C. testibliquum*, *Phyllostomum folium*, *Diplostomulum spathaceum*, *T. percae fluviatilis*, *Caryophyllaeus laticeps* and *Rhabdochona* sp.

G.I.F.

530—School Science Review. London.

- a. CRAMP, A. C., 1956.—“Bladder worms in the rabbit.” 37 (132), 243–248.
b. LAPAGE, G., 1956.—“The potato-root eelworm and other species related to it.” 37 (133), 321–336.

(530b) Lapage gives a clear general account of *Heterodera rostochiensis*, its life-cycle, its effect on potato crops and the various methods now in use for controlling it. This is followed by a brief account of other species of *Heterodera*, especially *H. schachtii*, *H. major* and *H. göttingiana*, and of *Meloidogyne*.

S.W.

531—Schweizerische Zeitschrift für Allgemeine Pathologie und Bakteriologie.

- a. FRICSAY, M., 1956.—“Lungenveränderungen bei Laboratoriumsratten infolge Infektion mit *Trichosomoides crassicauda*.” 19 (3), 351–355. [English & French summaries p. 355.]

(531a) Fricsay reports that albino rats being used in experimental work were found on histological examination to have unexplained granulomatous inflammatory foci in the lungs. Further study showed that the lung changes were associated with *Trichosomoides crassicauda* infection of the urinary bladder. A.E.F.

532—Science and Culture. Calcutta.

- a. CHANDRA, V., 1956.—“*Heterodera* sp. on *Psoralea corylifolia* L.” [Correspondence.] 22 (1), 35.

(532a) The roots of plants of *Psoralea corylifolia* L. from a field where more than half the plants had died were found to have numerous galls of varied size. “The root galls were examined under the microscope and fast, colourless, moving structures were noticed. These were identified as *Heterodera* sp. (nematode).” M.T.F.

533—Soobshcheniya Akademii Nauk Gruzinskoi SSR.

- a. KOYAVA, L. I., 1956.—[*Metastrongylus tschiauricus* n.sp., parasite of wild boar in Georgia.] 17 (6), 527–530. [In Russian.]
b. KURASHVILI, B. E., 1956.—[Zoogeographical characteristics of the helminth fauna of game birds in Georgia.] 17 (10), 935–940. [In Russian.]

(533a) *Metastrongylus tschiauricus* n.sp., which is described and figured from *Sus scrofa* in the Georgian S.S.R., differs from *M. pulmonalis*, *M. elongatus*, *M. salmi* and *M. pudendotectus* in having unequal spicules and, except from *M. pulmonalis*, in having a transversely striated cuticle. The new species is nearest to *M. pudendotectus* in which, however, the spicules are 1.31 mm. to 1.65 mm. long and are entire at their proximal ends, while in *M. tschiauricus* the large spicule is 0.87 mm. and the small 0.67 mm. long and they are branched at their proximal ends. The distal ends carry well differentiated hook-like projections. G.I.P.

(533b) Kurashvili sets out the helminth fauna of game birds characteristic for the steppe, plain, mountainous, and lake and marsh zones in the Georgian S.S.R. G.I.P.

534—Station Bulletin. Oregon Agricultural Experiment Station.

- a. PAGE, G. & JENSEN, H., 1956.—“Soil fumigation equipment for nematode control.” No. 555, 19 pp.

(534a) Detailed descriptions with scale plans of equipment for the application of fumigants to soil are given. A formula is given to enable the equipment to be calibrated for application rate. H.R.W.

535—Studii si Cercetări de Inframicrobiologie, Microbiologie si Parazitologie. Bucharest.

- a. NITULESCU, V., POZSGI, N., SORESCU, A., PANAITESCU, D., HACIG, A. & SOLOMON, P., 1956.—“Probleme legate de cercetarile helmintologice in regiunile miniere.” 7 (1/2), 193–202. [French & Russian summaries pp. 201–202.]

(535a) Several thousand people were surveyed for intestinal helminths in 11 coal-mines in the regions of Petrosani and Ploesti in Rumania. The incidences are tabulated. They varied considerably, indicating the existence of undefined factors obstructing dispersal in some mines. Ancylostoma infection, for example, found in five mines, occurred chiefly in people from the focal area of Banat but had not spread. Discussing whether infection takes place above or below ground, Nitulescu *et al.* tabulate for comparison the incidence of intestinal worms in several hundred schoolchildren in five mining areas. The ratio of Ascaris incidence to Trichuris incidence in the schoolchildren roughly tallied with that of the miners in the same localities. The helminth picture was similar above ground to that in people who worked below ground. From this it is concluded that infection takes place in the home. M.MCK.

536—Texas Reports on Biology and Medicine.

- a. STIMMEL, C. & SCOTT, J. A., 1956.—"The regularity of egg output of *Schistosoma haematobium*." **14** (4), 440-458.

(536a) The daily average output of *Schistosoma haematobium* eggs in the urine of a case followed over a period of 54 consecutive days was 8,440 eggs and in a second case it averaged 50,497 daily during a 10-day period. The data collected indicated that there was a definitely higher output related to the individual's increased activity during the day and to the more frequent passage of smaller specimens of urine. No evidence was obtained which supported the frequent recommendation to take the last portion of the first specimen of urine passed in the morning.

R.T.L.

537—Therapie der Gegenwart.

- a. HERBST, R., 1956.—"Seltene Krankheitsbilder bei Ascariasis." **95** (6), 209-211.

(537a) Herbst describes three cases of ascariasis in adults with unusual features. In the first, migrating larvae caused eosinophil lung infiltrations with spontaneous pneumothorax; in the second, obstruction of the main bronchus led to massive collapse of the lung; and in the third, following a nephrectomy, an adult *Ascaris* was eliminated via the urinary tract. A.E.F.

538—Tidsskrift for den Norske Laegeforening.

- a. MYRSETH, O., 1956.—"Echinokokk-sykdommen i Finnmark." **76** (22), 867-871. [English summary p. 871.]
 b. GRYTTE, G., 1956.—"Echinokokkcyste i nyre." **76** (22), 872, 874. [English summary p. 874.]

(538a) Myrseth reports eleven cases of hydatid disease of the lung among the population of Finnmark (northern Norway) and gives a brief description of each. He also gives a general account of the aetiology and pathogenesis of the infection. A.E.F.

(538b) Grytting describes from Oslo a case of hydatid cyst in the right kidney in a 31-year-old male. The infection was diagnosed incidentally when an X-ray examination for peptic ulcer was carried out. A.E.F.

539—Tierärztliche Umschau.

- a. SUMMA, H. & STEPPE, W., 1956.—"Die Rinderfinne und die *Taenia saginata*, ein hygienisches und wirtschaftliches Problem." **11** (9), 311-319.
 b. RASCHKE, E., 1956.—"Ein Vergleich der Wirksamkeit deutscher und amerikanischer Massnahmen zur Verhütung der menschlichen Trichinose." **11** (10), 357-360.

(539a) Summa & Steppe report that the incidence of *Cysticercus bovis* in cattle in Germany has increased in recent years: in 1954, 1.62% of animals killed at the Nürnberg abattoir were infected. They present a detailed account of cysticerciasis in cattle and *Taenia saginata* infection in man, dealing with symptoms, diagnosis, treatment and prevention. The differential diagnoses of *Taenia solium*, *T. saginata* and *Diphyllobothrium latum* are shown in tabular form, supplemented by figures. A.E.F.

(539b) Raschke has examined 764 human diaphragms sent in from the pathological institutes of three German universities between October 1954 and September 1955: only two of these were positive for *Trichinella*. He compares these figures with those obtained from thirteen investigations in the U.S.A. between 1931 and 1954 and which reveal percentage infections varying between 7.8 and 36.3. From these figures Raschke concludes that the very low incidence in Germany is due to the exemplary way in which *Trichinella* inspection of pig meat is carried out in that country. Summaries of investigations in other countries on the incidence of human trichinelliasis are included. A.E.F.

540—Tijdschrift voor Diergeneeskunde.

- a. HEIDA, Y., 1956.—“Distomatose-bestrijding door middel van capsules tetra-chloorkoolstof.” 81 (22), 1019–1024. [English, French & German summaries p. 1024.]

(540a) In Heida's experience the damage to liver tissue in sheep caused by carbon tetrachloride cannot be prevented. Treatment of liver-fluke infection, if repeated monthly, makes the eradication of all but a few fully grown worms possible and a full course of treatment, if repeated for several years, will clear infected meadows provided that they are not reinfected by cattle. The regular administration of carbon tetrachloride capsules to animals on slightly infected meadows increased the meat weight by 1 kg. and on heavily infected meadows by about 6 kg. The scattering of agricultural salt in ditches in low-lying, flat and permeable land proved of no value in combating the spread of liver-fluke.

R.T.L.

541—Transactions of the American Microscopical Society.

- a. SELF, J. T. & CAMPBELL, J. W., 1956.—“A study of the helminth parasites of the buffalo fishes of Lake Texoma with a description of *Lissorchis gullaris* n.sp. (Trematoda: Lissorchiidae).” 75 (4), 397–401.
- b. MANKAU, S. K., 1956.—“Studies on the helminth, *Echinococcus alveolaris* (Klemm, 1883), from St. Lawrence Island, Alaska. II. Development of brood capsules and scolices in alveolar cysts, in white mice.” 75 (4), 401–406.
- c. HARGIS, Jr., W. J., 1956.—“Monogenetic trematodes of Gulf of Mexico fishes. Part X. The family Microcotylidae Taschenberg, 1879.” 75 (4), 436–453.
- d. COLEMAN, R. M. & MIZELLE, J. D., 1956.—“The presence and source of ascorbic acid in *Hymenolepis nana* var. *fraterna* (v. Siebold, 1852).” 75 (4), 483–491.

(541a) Buffalo fish of the species *Ictiobus bubalus*, *I. cyprinella* and *I. niger* from Lake Texoma, Oklahoma, were examined for parasites. *Lissorchis gullaris* n.sp. from all three species differs from *L. fairporti* chiefly in having a distinct oesophagus, two uterine loops instead of one in the post-acetabular region, an armed protrusible cirrus and a more distinctly lobed ovary which is smaller relative to body-length. *L. gullaris*, one of the commonest digenetic trematodes in fish in this lake, was also found in Red River, Bryan County. An emendation is made of Magath's original diagnosis of *Lissorchis*, to read: “Fleshy spines or fimbriae present in depressions of oral and ventral suckers. Prepharynx and esophagus present but may be much reduced”. Other worms found were *Camallanus ancyloDIRUS*, *Nematobothrium texomensis*, *Capingens singularis*, *Pseudolytocestus differtus*, *Glaridacris confusus*, *Monobothrium ingens*, caryophyllaeid larvae and proteocephalid plerocercoids. The Caryophyllaeidae had caused extensive parasitism. *Camallanus ancyloDIRUS* seems to be a new record in buffalo fish but may be a purely transient parasite since it was not localized in the intestine or securely attached to the mucosa.

M.MCK.

(541b) Experimental infections with gravid *Echinococcus* segments from naturally infected Arctic foxes from St. Lawrence Island produced fertile alveolar cysts in 70% of white mice. The development of the brood capsules and scolices is described. Scolex production usually became evident after the third or fourth month of infection. Multiple brood capsules filled with scolices often occupied the entire cyst but in no case was the whole cystic mass fertile.

M.MCK.

(541c) Hargis records and discusses eleven species of microcotylids from fish from the Gulf of Mexico. All of the eight known forms constitute new locality records. *Microcotyle pseudoheteracantha* n.sp. from *Cynoscion nothus* (possibly also *C. arenarius*) is smaller than *M. heteracantha* and measures 3.5 mm.–4.6 mm. in length. The cotylophore is relatively longer and narrower; the vaginal rim is thicker; there are three pairs of muscular pieces in the genital atrium which are armed with six to eight spines and the saccular posterior muscular piece is surrounded by small muscular pieces in collar-like arrangement. Later study may reveal these differences to be subspecific. In *M. pseudomugilis* n.sp. from *Mugil cephalus* the atrium is armed but the cirrus is not, apparently contrary to the condition in *Microcotyle mugilis*. The new species should probably include the specimens ascribed to *M. mugilis* by

Parona & Perugia in 1890 (which had atrial, but not cirrus, armature) and some or all of the worms identified by Koratha in 1955 as *Metamicrocotyla macracantha*. *Pyragraphorus hippos* n.sp. from *Caranx hippos* inhabits a different host from that of *P. incomparabilis*, the dorsal loop elements of the clamp are longer, the vaginal tube is not sculptured, the body is shorter, even when relaxed, measuring 2.9 mm. to 3.3 mm. and there are no vitellaria in the dorsal lobe of the haptor. Koratha's specimens recorded as *P. incomparabilis* in 1955 are probably *P. hippos*. Hargis redescribes *P. incomparabilis* from the type specimen and emends the generic diagnosis of *Pyragraphorus* to include *P. incomparabilis*, *P. eueides* and *P. hippos*. This group illustrates the author's view that body form, shapes and relations of internal organs and fine details of clamp sclerites are more important taxonomically than general clamp shape. Relaxed material of *Microcotyle pomatomi* and related species showed that the clamps are normally in two rows. In *M. heteracantha* the vitelline ducts and reservoir are ventral to the arms of the ovary and not dorsal as depicted by Manter. Other worms found were *M. archosargi*, *M. pogoniae*, *M. pomacanthi* and *Metamicrocotyla macracantha*. Until a thorough empirical study of the Microcotylidae has been made, Hargis accepts, in principle, Sproston's arrangement (1946) of the group. M.MCK.

(541d) Traces of ascorbic acid were found in 100 *Hymenolepis nana* var. *fraterna* from eight *Mus musculus* (*albus*) deprived of vitamin C. The mice had been fed succinylsulphathiazole to reduce or eliminate intestinal bacteria as a possible source of ascorbic acid. Vitamin C may have reached the worms through the "exocrino-enteric circulation", i.e. through materials which flow into the intestinal lumen and are resorbed, since (i) scurvy developed in infected mice deprived of vitamin C and (ii) their faeces had less ascorbic acid than faeces of uninfected mice deprived of the vitamin. The worms may have obtained ascorbic acid from the *succus entericus* for the vitamin was found in the mucosa of infected mice whether they had been allowed vitamin C or not. The worms may have synthesized the vitamin since they survived in a medium free of ascorbic acid as long as control worms, i.e. 18 days, and still contained ascorbic acid. M.MCK.

542—Transactions of the Suffolk Naturalists' Society.

- a. PRUDHOE, S., 1956.—"Note on a tapeworm from a yellow-necked field mouse." 10 (1), 66-67.

(542a) *Catenotaenia lobata* hitherto known only in the yellow-necked field-mouse (*Apodemus flavicollis*) in Russia, has now been found in this host in Suffolk, for the first time in England, although it has been previously recorded from *Apodemus sylvaticus* and *Clethrionomys glareolus*. Prudhoe discusses the systematic position of the genus *Catenotaenia*. On morphological grounds it belongs to Anoplocephalidae but as its larval structure is of cysticeroid rather than plerocercoid type it has been placed by some workers in a separate family Catenotaeniidae. R.T.L.

543—Trudi Gelmintologicheskoi Laboratorii. Akademiya Nauk SSSR.

- a. BOLDIREVA, N. V., 1956.—[The biochemistry of helminths.] 8, 5-20. [In Russian.]
b. BOLDIREVA, N. V., 1956.—[The application of labelled atoms in helminthology.] 8, 21-30. [In Russian.]

(543a) Boldireva reviews some of the more recent work on the oxygen content of the medium surrounding helminths and of the haemoglobin and some tissue respiratory enzymes of helminths. G.I.P.

(543b) Boldireva recounts, from the literature, experiments on the application of radioactive substances mainly in the study of the carbon metabolism of helminths, their manner of feeding, the permeability of their cuticle and membranes and the accumulation of anthelmintics in helminths and in host tissues. G.I.P.

543—Trudi Gel'mintologicheskoi Laboratorii. Akademiya Nauk SSSR (cont.)

- c. IVASHKIN, V. M., 1956.—[On the life-cycle of the acanthocephalan *Moniliformis moniliformis* (Bremser, 1811) Travassos, 1915.] 8, 31-32. [In Russian.]
- d. MOZGOVOI, A. A., RIZHIKOV, K. M. & SUDARIKOV, V. E., 1956.—[The work of the 289th Soviet Helminthological Expedition in 1952-53 in the regions of the Amu-Dari delta and the Murgab river basin.] 8, 33-50. [In Russian.]
- e. MOZGOVOI, A. A., RIZHIKOV, K. M., SUDARIKOV, V. E. & LEIKINA, E. S., 1956.—[The work of the 290th Soviet Helminthological Expedition in 1953 in Yakutsk A.S.S.R.] 8, 51-76. [In Russian.]
- f. MOZGOVOI, A. A. & ROMANOVA, N. P., 1956.—[A study of Ascaridata of birds and reptiles from an investigation in the Moscow zoological gardens.] 8, 77-84. [In Russian.]
- g. PARAMONOV, A. A., 1956.—[Revision of the classification of Rhabditata of plants.] 8, 85-111. [In Russian.]

(543c) Larval *Moniliformis moniliformis* are described from *Blaps holofila*, a new intermediate host for this species. Of 100 beetles collected near a village in western Kazakhstan eight were infected. G.I.P.

(543d) Preliminary results are given of a helminthological survey of domestic and wild animals from various parts of the Kara Kum desert. The domestic animals included 1,173 cattle which were infected by *Fasciola* (45.4%), *Thelazia* (33.1%), *Cysticercus* (12.1%), *Echinococcus* (11.9%) and anoplocephalids (9.8%), and 1,193 sheep mainly infected by *Echinococcus* (52.5%), *Dictyocaulus* (34.0%), anoplocephalids (13.5%) and *Fasciola* (8.4%). The results for wild animals are tabulated and give the numerical and percentage infection with trematodes, cestodes, nematodes and acanthocephalans for each species of host. Eight species of fish, three of amphibians, 11 of reptiles, 75 of birds and 12 of mammals (mainly rodents) were examined and the total infections obtained were 6.8%, 78.2%, 36.3%, 80.8% and 49.7% respectively. The low infection of the fish, which were caught in the river Murgab, is probably explained by the small number of molluscs and crustaceans present in the river. G.I.P.

(543e) The population, including children, of three villages along the river Lena in Yakutsk A.S.S.R. was examined for helminths. The infection of the inhabitants was light and mainly composed of cestodes especially *Taenia saginata* and *Diphyllobothrium latum*. Nematodes were found in immigrants but did not spread owing to adverse climatic conditions. Various animals were also examined and the infections tabulated for each host species. 178 of 324 fish, 27 of 31 amphibians, 277 of 436 birds and 255 of 496 mammals (mainly rodents) were infected with helminths. Fish and amphibians were free of acanthocephalans and the latter also of cestodes. Two lampreys and one *Lacerta vivipara* were uninfected. G.I.P.

(543f) Two species of Ascaridata are figured and described from snakes brought to the Moscow Zoo, one and two-and-a-half months previously, from China. *Ophidascaris macrospicula* n.sp. from *Naja hannah* is characterized by its long spicules which measure 6.83 mm. It differs from the nearest two species, *O. najae* and *O. papillifera*, also by its smaller body and the smaller number of pre-anal papillae in the male (45 pairs). *Hexametra multicornis* n.sp. from *Vipera russellii* is contrasted with three other species of *Hexametra* with pulp strands in the lips. From *H. quadricornis* it differs in having three tetragonal lips and the vulva in the posterior half of the body, from *H. boddaertii* in having small marginal teeth on the lips and four pulp strands leading to the lip edge and from *H. sewelli* by the smaller number of post-anal and pre-anal papillae (4 and 26 pairs). G.I.P.

(543g) For the species of Rhabditata a new classification with three suborders, viz., Rhabditata, Diplogasterata and Cephalobata n.subordo is proposed. Rhabditata now contains Bunonematidae n.fam. raised from subfamily rank. Brevibuccinae n.subf. is erected within Rhabditidae for *Brevibucca*. Paramonov places Pseudodiplogasteroidinae in Rhabditidae and, disagreeing with Goodey (1951) that *Cheilobus* should be included in Rhabditidae, leaves it in Alloionematinae. Cephalobata is divided into Cephalobidae and Panagrolaimidae n.fam.; in the latter the probolae are little developed or absent, the cheilostom and protostom merge

543—Trudi Gel'mintologicheskoi Laboratorii. Akademiya Nauk SSSR (cont.)

- h. RIZHIKOV, K. M., 1956.—[The helminth fauna of anatid birds in the Ribinskoye water reservoir.] 8, 112-130. [In Russian.]
- i. RIZHIKOV, K. M., 1956.—[The helminth fauna of anatid birds in their wintering places.] 8, 131-139. [In Russian.]
- j. RIZHIKOV, K. M., 1956.—[*Syngamus citelli* n.sp. in *Citellus undulatus* Pall. from Yakutsk A.S.S.R.] 8, 140-143. [In Russian.]
- k. SKRYABIN, K. I. & GUSHANSKAYA, L. K., 1956.—[Classification of trematodes of the suborder Hemiurata (Markevich, 1951) Skryabin et Gushanskaya, 1954.] 8, 144-158. [In Russian.]
- l. SPASSKI, A. A., 1956.—[On the systematics of aphasmidian nematodes.] 8, 159-164. [In Russian.]

to a greater or lesser extent to form one cavity and the oesophageal musculature reaches only to the base of the prothabdoms. The new family contains Panagrolaiminae, Alloionematinae, Turbatricinae, Cephalobiinae, Daubaliinae and Procephalobinae n.subf. (with the genera *Procephalobus*, *Tricephalobus* and *Micronema*). G.I.P.

(543h) Seven species of ducks (mainly *Anas platyrhynchos*, *A. crecca* and *A. querquedula*) which are the commonest species in the Ribinskoye reservoir area both during the nesting and the migrating periods, were examined for helminths. 43 out of 44 birds were infected. Short notes on the incidence, hosts, localization and seasonal dynamics and, in some cases, short descriptions and figures are given for each of the 22 cestodes, 14 trematodes, 8 nematodes and one acanthocephalan found. The helminths are also listed under their hosts. G.I.P.

(543i) Five species of *Anas* and three of *Nyroca* were examined during November and December in the Poti area (Georgian S.S.R.). The birds had migrated south to their wintering place from the more northerly part of Europe. All the birds were infected and nematodes had the highest incidence although the trematodes and cestodes were more diverse. The most frequent species were *Notocotylus attenuatus* and *Cotylurus cornutus*, *Microsomacanthus fausti*, and *Amidostomum boschadis*, *Epomidiostomum anatinum* and *Thominx anatis*. Both adult and immature stages of all these species were found, showing that the birds may acquire these infections in the Poti area. Notes on the incidence, hosts and localization are given for each of the helminths found, which are also listed under their hosts. G.I.P.

(543j) *Syngamus citelli* n.sp., of which immature specimens are described and figured from *Citellus undulatus* in Yakutsk A.S.S.R., falls into *Rodentogamus*, differing from *S. ryjikovi* of mice, the only other species in this subgenus, by the number of buccal teeth (six in *S. citelli*, eight in *S. ryjikovi*) and the length of the spicules (0.082 mm. in *S. citelli*, 0.070 mm. in *S. ryjikovi*). G.I.P.

(543k) Following a historical note on Hemiurata and a short discussion of the diagnostic value of some of their characters there is an account of the revised classification of Hemiurata by Skryabin & Gushanskaya [the main part of which is in "Trematodes of animals and man. Principles of trematology", Volumes IX, X, XI and XIII: for abstracts which have already been published see Helm. Abs., 23, No. 993 and 24, No. 710 and No. 711]. The Hemiurata have been subdivided into 18 families which include all the existing members of this suborder. The families are listed with the subfamilies and genera and are grouped into two superfamilies, viz., Hemiuroidea Faust, 1929 emended by Skryabin & Gushanskaya, 1956, and a new superfamily Azygioidea Skryabin & Gushanskaya, 1956. Diagnoses for the two superfamilies are given. The following family and subfamilies are new, Liocercidae, Azygiinae and Arnoldiinae in the Azygioidea, and Tricotyledoninae and Otiotrematinae in the Hemiuroidea. Diagnoses are given for these and the two new superfamilies. The new genus *Uroproctinella* is only mentioned here [but it is described in "Trematodes of animals and man", Vol. XIII, pp. 637-645, and is erected for *Hirudinella spinulosa*]. G.I.P.

(543l) Spasski briefly reviews some of the literature on the systematics of parasitic aphasmidian nematodes and summarizes his own recent changes in the classification of Trichocephalata and Dioctophymata [for abstract see Helm. Abs., 23, No. 996]. G.I.P.

543—Trudi Gel'mintologicheskoi Laboratorii. Akademiya Nauk SSSR (cont.)

- m. SPASSKI, A. A., 1956.—[Revision of the genus *Dicranotaenia* (Cestoda: Hymenolepididae).] 8, 165–175. [In Russian.]
- n. SPASSKI, A. A., 1956.—[Analysis of the hymenolepidid fauna of anseriform birds in eastern China.] 8, 176–189. [In Russian.]
- o. SPASSKI, A. A., 1956.—[On the phylogenetic relationships of the cestodes *Hymenandrya thomomyis* (Anoplocephalidae) and *Hymenolepis horrida* (Hymenolepididae), parasitic in rodents.] 8, 190–199. [In Russian.]
- p. SPASSKI, A. A., 1956.—[The species composing the genus *Paranoplocephala* (Cestoda: Anoplocephalidae).] 8, 200–213. [In Russian.]

(543m) *Weinlandia macrostrobiloides* Mayhew, 1925, *W. introversa* Mayhew, 1925, *Hymenolepis sacciperium* Mayhew, 1925, *H. parvisaccata* Shepard, 1943 and *Dicranotaenia mergi* (Yamaguti, 1940) are shown to be synonyms of *D. coronula* (Dujardin, 1845) as the principal differential characters of these species and *D. coronula* are characters which vary in different specimens of *D. coronula*. *H. sacciperium* is thought to be an aberrant form of *D. coronula*. All the synonyms of *D. coronula* are listed. Of the eight species now left in *Dicranotaenia*, only *D. coronula* is considered to be fully established. G.I.P.

(543n) Spasski analyses the hymenolepidid species described by Tseng-Shen in 1932 from anseriform birds in China and concludes (i) that *Hymenolepis longistylusa* has been presumably described from the hooks of *H. echinocotyle* and the strobila of a species of *Sphenacanthus*; (ii) that the hooks described for *H. meggitti* belong to some other hymenolepid, possibly *Weinlandia mayhewi*, while those belonging to *H. meggitti* had been mistakenly labelled *H. compressa* (now *Microsomacanthus compressa*); (iii) that the hooks of *W. mayhewi* as depicted by Tseng-Shen fully correspond to those of *M. compressa* and the strobila is characteristic of *Dicranotaenia coronula* which was also present in the collection but had been identified by Tseng-Shen as *W. querquedula* and *W. introversa*; (iv) that *W. simplex* (Fuhrmann, 1906) had been described from the scolex of *D. coronula* and the strobila of some species of *Sobolevicanthus*, and that the recurrence of *W. simplex* in Tseng-Shen's collection does not establish the species in view of the other misinterpretations made by him; and (v) that *H. solowiowi* is synonymous with *M. compressa*, and *H. pingi* is a synonym of *Wardium creplini*. Spasski includes a revised list of 14 hymenolepidid species from Anseriformes in East China and the description of *Anatinella meggitti* (Tseng-Shen, 1932) based on specimens from Russia. An editorial note suggests that the author's conclusions require additional study of type specimens. G.I.P.

(543o) *Hymenandrya thomomyis* is transferred from Anoplocephalidae to Hymenolepididae as the polar tips of the pyriform apparatus, mistakenly described for the embryophore of *H. thomomyis* by Smith (1954), are in fact polar projections of hymenolepid type and as a reticulate uterus is found also in hymenolepidids. *H. thomomyis* possesses all the characters of *Hymenolepis*, of which *Hymenandrya* is made a synonym, and is like *Hymenolepis horrida* except in the number of testes which, however, varies in both species. Spasski suggests that *H. thomomyis* is an aberrant form within the species *H. horrida*, but refrains from making it a synonym. G.I.P.

(543p) Spasski reviews the validity of the species of *Paranoplocephala*. Restating some of the changes made by him in this genus [for details see pp. 305–332 of "Principles of cestodology, Volume I. Anoplocephalata—tapeworms of domestic and wild animals" edited by K. I. Skryabin and published in Russian in 1951] and taking into consideration the work published by Rausch in 1952 he concludes that *P. variabilis* is synonymous with *P. omphalodes* f. *blanchardi* and that *P. infrequens* (with its synonyms *P. brevis* and *P. troeschi*) is a synonym of *P. dentata*. The eleven species now contained in the genus are listed. G.I.P.

543—Trudi Gel'mintologicheskoi Laboratorii. Akademiya Nauk SSSR (cont.)

- q. SPASSKI, A. A., 1956.—[Defining more accurately the specific composition of some hymenolepidid genera.] 8, 214–225. [In Russian.]
- r. SPASSKI, A. A., 1956.—[The relationship of the genera *Meggittina* Lynsdale, 1953 and *Skrjabinotaenia* Akhmanian, 1946 to the family Catenotaeniidae Spasski, 1950.] 8, 226–232. [In Russian.]
- s. SPASSKI, A. A. & SPASSKAYA, L. P., 1956.—[The holarctic character of the cestode fauna of Corvidae in the U.S.S.R.] 8, 233–239. [In Russian.]
- t. SUDARIKOV, V. E., 1956.—[The identity of the genera *Linstowiella* and *Paracoenogonimus* (Trematoda: Cyathocotylidae).] 8, 240–247. [In Russian.]
- u. SHIKHOBALOVA, N. P., 1956.—[Acquired immunity in chicks to *Syngamus* infection.] 8, 248–258. [In Russian.]

(543q) Spasski transfers *Hymenolepis linderi*, *H. pauciovata* and, with some hesitation, *H. inhamata* to *Staphylepis* as new combinations, and makes *H. daturica* a synonym of *Passerilepis stylosa*. He finds that *Aploparaksis caballeroi* does not belong to *Aploparaksis* and that Flores-Barroeta (1953) used gravid segments to describe the gonads thus misinterpreting most of the organs. Spasski thinks it likely that *A. caballeroi* has three testes (not one) and points out its similarity to *Hymenolepis lari*, refraining however from making it a synonym.

G.I.P.

(543r) Spasski disagrees with Lynsdale (1953) who did not acknowledge the family Catenotaeniidae made both by Spasski (1950) and by Wardle & McLeod (1952), and places *Meggittina baeri* Lynsdale in Catenotaeniidae. He argues that, as *Meggittina* has not been differentiated from *Skrjabinotaenia* and some other genera [not named] made by Russian authors, its validity is not yet established and that these two genera may be synonymous. [Wolfgang, also in 1956, made *Skrjabinotaenia* a synonym of *Catenotaenia* and transferred *M. baeri* to *Catenotaenia*; for abstract see Helm. Abs., 25, No. 11a.]

G.I.P.

(543s) *Weinlandia corvi* and *Wardium variabile* from *Corvus brachyrhynchos* in North America become synonyms of *Passerilepis stylosa* and *Variolepis farciminosa* respectively (the latter two species occurring in various corvid birds in the palaearctic region), because, as the authors point out, differences in oecology and distribution in the absence of anatomical divergencies are insufficient for the distinction of these species, and a number of helminths as well as corvid birds occur in both the nearctic and palaearctic subregions of the Northern Hemisphere.

G.I.P.

(543t) Sudarikov, disposing of the differences between *Linstowiella viviparae* (Linstow, 1877) and *Paracoenogonimus ovatus* Katsurada, 1914, combines them into one species, viz., *Paracoenogonimus viviparae* n.comb. *Paracoenogonimus* which is redefined includes also *P. szidati* n.comb.

G.I.P.

(543u) Shikhobalova has studied the immunity developed in 10 to 45-day-old chicks to infections with *Syngamus skrjabinomorpha* and *S. trachea*. Preliminary experiments showed the reduction in weight or in the weight increase of infected chicks and indicated that cockerels became less infected than pullets and that the most suitable infection doses were 250 to 500 eggs per chick. In chicks re-infected with 250, 500 or 1,700 eggs, 10 or 35 days after the first infection, a partial immunity developed in 15 to 25 days. This was expressed in the smaller size and reduced number of the worms developing from the second infection, some having passed out of the chick while immature. The immunity which developed from *S. trachea* was also active against *S. skrjabinomorpha*. No worms developed in chicks which had been re-infected with 250 eggs eight days after worms from the first infection had left the chick, suggesting absolute immunity, but the number of chicks which survived from the first infection was too small to be significant.

G.I.P.

543—Trudi Gel'mintologicheskoi Laboratorii. Akademiya Nauk SSSR (cont.)

- v. SHIKHOBALOVA, N. P., 1956.—[The determination of precipitates in the blood of chicks infected with *Syngamus skrjabinomorpha* Rizhikov, 1948.] 8, 259–266. [In Russian.]
- w. SHIKHOBALOVA, N. P. & RIZHIKOV, K. M., 1956.—[The biology of *Syngamus skrjabinomorpha* Rizhikov, 1948.] 8, 267–277. [In Russian.]
- x. KASIMOV, G. B., 1956.—[The helminth fauna of galliform birds of economic importance.] [Abstract of thesis.] 8, 278–281. [In Russian.]
- y. POPOVA, T. I., 1956.—[Nematodes—Strongyloidea of domestic and wild animals, and of man. The morphology, biology, systematics, experimental determination of the phylogenetics and zoogeography of Strongyloidea.] [Abstract of thesis.] 8, 281–285. [In Russian.]

(543v) When living *Syngamus skrjabinomorpha* larvae, dissected from the lungs of chicks, were placed in undiluted sera from infected chicks, the percentage of larvae forming precipitates increased progressively to a maximum of 90% to 100% on the 20th to 30th day after infection, but was considerably lower when larvae from eggs hatched *in vitro* were used. The formation of antibodies was observed in three groups of chicks from the tenth day after infection. The percentages of larvae showing precipitates were generally high (about 100%) and maintained that level for over three-and-a-half months. The rapidity of the rise in the percentages was most strongly expressed when a primary infection with 500 eggs had been followed one month later by 1,400 eggs, and less so by a single infection with 700 or 1,400 eggs. Antibodies were more concentrated in chicks which had received 500 to 600 eggs four times at intervals of two to four weeks, than in those which were infected twice only. They were still present in the blood of chicks from which the worms had already passed. Precipitates were also detected by the ring precipitation reaction using antigen from adult *Syngamus* at 1:10,000 dilution.

G.I.P.

(543w) The development of *Syngamus skrjabinomorpha* in chicks was studied and the various stages are described and figured. Eggs which have passed with the faeces of chicks develop to the infective stage through two moults in 18 to 20 days at 18–23°C. and in 8 to 9 days at 27°C. Hatched infective larvae may retain the cuticular envelope from the second moult. In experimentally infected chicks, larvae reached the liver in two hours, the lungs where the young adults develop on the second day, and the trachea on the 10th to 12th day. They were first found in the lower part of the trachea but by the 18th day most of the worms had reached the upper part. Egg laying began on the 17th to 21st day and continued for two-and-a-half months and occasionally for up to three-and-a-half months.

G.I.P.

(543x) It is stated that the thesis, of which this is an abstract, contains data from the literature and the results of many years of Kasimov's own investigations on the helminth fauna of Galliformes. It includes data on the morphology and biology, where known, of all the existing helminths from Galliformes, which number 380 species and subspecies from 160 species and subspecies of birds. The abstract lists six species recently described by Kasimov and *Postharmostomum gallinum* var. *uluri* n.var., and briefly discusses the characters and geographical distribution of the helminth fauna of different bird groups.

G.I.P.

(543y) This abstract states that Popova's thesis monographs the 491 known Strongyloidea, giving descriptions and keys of the families, genera and species, including an analysis from her own material of the morphological, biological and oecological characters of representative Strongyloidea. On this analysis, Popova elucidates the geographical distribution and suggests phylogenetic relationships of the various groups of Strongyloidea. The abstract summarizes a discussion of the helminths under their mammalian, avian, reptilian and amphibian hosts and divides strongyloid development into five types, which are typified by and named after Trichonematidae, Strongylidae, *Delafondia*, Ancylostomatidae and Syngamidae respectively, and are characterized by the type of larval migration or its absence.

G.I.P.

543—Trudi Gel'mintologicheskoi Laboratorii. Akademiya Nauk SSSR (cont.)

- z. SHAKHTAKHTINSKAYA, E. M., 1956.—[The helminth fauna of domestic aquatic birds and aquatic birds of economic importance in Azerbaijan SSR.] [Abstract of thesis.] 8, 285-286. [In Russian.]

(543z) This is an abstract of a thesis based on the examination during 1949-50 of 1,044 aquatic birds representing 43 species from various areas of Azerbaijan during which 136 helminths [not named in the abstract] were found and of which 92 were new for Azerbaijan and 22 were new for Russia. Of ten species listed, three have already been named and described by the author in 1949 and 1950; the others are *Echinochasmus matheossiani* n.sp. and *Diorchis skarbilowitschi* n.sp. from *Colymbus cristatus*, *Leptotaenia skryabini* n.sp. and *Dicranotaenia eranui* n.sp. from *Phoenicopterus roseus*, *Amidostomum petrowi* n.sp. and *Prosthorrhynchus gallinagi* n.sp. from *Capella gallinago* and *Epomidiostomum petrowi* n.sp. from *Fulica atra*. All the helminths found are said to be described in detail in the thesis. G.I.P.

544—Trudi Novoherkasskogo Zootekhnicheskogo-Veterinarnogo Instituta.

- a. LISENKO, A. A., 1956.—[Immunity of sheep to *Haemonchus* infestation.] 9, 139-158. [In Russian.]
 b. LISENKO, A. A., 1956.—[New method of administering phenothiazine for large-scale anthelmintic treatment of animals.] 9, 159-167. [In Russian.]
 c. LISENKO, A. A., 1956.—[Experimental prophylaxis of *Haemonchus* infection in sheep.] 9, 168-177. [In Russian.]
 d. KRIVOSHTA, E. E., 1956.—[Testing of new drugs against *Dicrocoelium* in sheep.] 9, 178-188. [In Russian.]

(544a) Lambs, and particularly adult sheep, when immunized and hyperimmunized by oral infection with *Haemonchus contortus* larvae acquired a firm immunity to subsequent infection with doses of larvae lethal to non-immunized controls. The immunity lasted six to eight months, but when maintained by periodic reinfection, absolute immunity can be preserved for three or more years. Injection of formalin-treated vaccine from mature worms provided only relative immunity and the subsequent infection of lambs with 500 to 1,000 larvae and again with ten to fifteen times the lethal dose was without clinical effects; goats gave similar results. Relative immunity also followed the intraperitoneal introduction of 500 to 100,000 living larvae. Subcutaneous injections of hyperimmune serum in total amounts of 20 to 120 ml. did not protect lambs, about two months old, against lethal doses of larvae, but only weak infections developed from doses of larvae below 2,000. G.I.P.

(544b) To make large-scale dosing of sheep with phenothiazine easier, a suspension is prepared by adding phenothiazine powder to a hot paste of 2.5% to 3.5% wheat flour in water at the rate of 10 gm. per 100 ml. of paste. The suspension is intubated through a funnel with a rubber tube and care should be taken that none is spilled on to the face of the sheep. Single doses of 0.5 to 2.0 gm. per kg. body-weight were effective against *Haemonchus* and were harmless. The only side effect observed after the fifth of 1 gm. doses given twice monthly was the appearance of albumin in the urine. For the simultaneous control of monieziasis 1% copper sulphate may be added to single phenothiazine doses. G.I.P.

(544c) The most effective dose of phenothiazine against *Haemonchus* in sheep was 0.6-0.7 gm. per kg. body-weight, intubated orally as a 10% suspension in a 2.5% to 3.5% flour paste. To treat the immature stages the anthelmintic should be administered two weeks after infection. G.I.P.

(544d) None of the 32 drugs tested, including various anthelmintics, were fully effective against *Dicrocoelium* infection in sheep. However, some of the flukes were killed following three doses of 5 gm. of male fern extract plus 2 ml. of carbon tetrachloride or a single dose of 15 gm. of hexachlorethane plus 2 ml. of carbon tetrachloride. G.I.P.

545—Tuinbouwberichten.

- a. MARIËN, A., 1956.—“Bestrijdingsproef op het schorsenerenaaltje.” **20** (5), 89–97.

(545a) Mariën reports on his tests of D-D mixture in the control of root-knot infection in scorzonera. On 15th April two sections of a plot were given injections of D-D at 62 c.c. (A) and 80 c.c. (B) per square metre respectively, a third section (C) remaining untreated as a control. The seed was sown on 2nd May and harvested in December. On A no plant was infected, on B infection rate was 2%, and on C it was 50%. In another similar experiment plants on both treated and untreated plots remained uninfected, although the control plot gave the better yield. The author concludes that treatment with D-D, although expensive, is effective in controlling root-knot eelworm on scorzonera. He considers that the interval between soil treatment and seed sowing should be at least four weeks and that a soil temperature of 5°C. was necessary at the time when D-D was applied.

A.E.F.

546—Uchënie Zapiski. Moskovski Gosudarstvenni Pedagogicheski Instituto im V. I. Lenina.

- a. KONTRIMAVICHUS, V. L. & POPOV, M. V., 1956.—[Dynamics of infection with helminths and latent helminthiases of mountain hares (*Lepus timidus*) in Yakutia.] **96** (6), 87–126. [In Russian.]
- b. GUBANOV, N. M. & FEDOROV, K. P., 1956.—[Helminths and helminthiases of mountain hares (*Lepus timidus*) in Verkhoyansk.] **96** (6), 127–135. [In Russian.]
- c. RIZHIKOV, K. M., GUBANOV, N. M. & FEDOROV, K. P., 1956.—[The life-cycle of protostrongylids of mountain hares (*Lepus timidus*) under conditions existing in Yakutia.] **96** (6), 137–145. [In Russian.]
- d. RIZHIKOV, K. M., GUBANOV, N. M. & FEDOROV, K. P., 1956.—[The biology of *Mozgovoyia pectinata*, cestodes of the hare.] **96** (6), 147–150. [In Russian.]
- e. GUBANOV, N. M., 1956.—[On the biology of *Taenia macrocystis* (Diesing, 1850).] **96** (6), 151–154. [In Russian.]
- f. TSVETAËVA, N. P. & MOZGOVOI, A. A., 1956.—[On the pathogenicity of lungworm disease (protostrongyles) and some other pulmonary diseases of hares in Yakutia.] **96** (6), 155–160. [In Russian.]

(546a) The authors have examined 1,192 hares from various areas of the Yakutsk region and discuss the distribution of the helminths found, the influence of the helminth factor on the number of hares and the influence of seasonal dynamics and of the age, sex and population strength of hares on helminth infections.

G.I.P.

(546b) In the Verkhoyansk area of Yakutsk 86.7% of *Lepus timidus* were infected with helminths. The species found were *Nematodirus aspinosus*, *Protostrongylus terminalis*, *Mozgovoyia pectinata* and *Taenia macrocystis*, the last being registered for the first time for hares and for Russia. *N. aspinosus* is considered identical with *N. petrovi* from *L. tolai* in Mongolia.

G.I.P.

(546c) The life-cycles of *Protostrongylus kamenskyi* and *P. terminalis* from hares were of the usual protostrongylid type; their larval stages could not be distinguished. Larvae passing with the faeces were 0.34–0.35 mm. long and infective larvae extracted from the sheath were 0.50–0.64 mm. long. Development in the snail intermediaries lasted 30 to 35 days. Of the molluscs found in the habitats of hares in the Yakutsk region, *Vellonia tenuilabris* and *Pupilla muscorum* were infected but not species of *Succinea* and *Agriolimax*. When infected *V. tenuilabris* were given to two rabbits, adults of *P. kamenskyi* and *P. terminalis* developed in the lungs.

G.I.P.

(546d) Oribatid mites, *Ceratopia bipilis*, collected in Yakutia were successfully infected with eggs of *Mozgovoyia pectinata* and, on dissection six days later, larvae were found measuring 0.030–0.039 mm. long with three pairs of embryonic hooks, each 0.01 mm. in length.

G.I.P.

(546e) In Verkhoyansk 3.4% of mountain hares were infected with cysticerci of *Taenia macrocystis*, of which the final hosts are Felidae. As, however, the lynx is rare in this area, Gubanov experimentally infected a wolf cub and 35 days later found 22 mature *T. macrocystis* in the intestine. G.I.P.

(546f) In Yakutia mixed infection of hares with *Protostrongylus kamenskyi* and *P. terminalis* was accompanied by chronic bronchitis and bronchiolitis, peribronchitis, alveolitis and formation of bronchiectasis. Simultaneously, there were microfilariae in the lungs of the adult hares. G.I.P.

547—Verslagen en Mededelingen van de Plantenziektenkundige Dienst te Wageningen.

- a. OOSTENBRINK, M., 1956.—“Over de resultaten van verschillende methoden voor het bepalen van vrijbeweeglijke aaltjes in grond.” No. 129, pp. 187–190. [English summary p. 189.]
- b. LOOF, P. A. A., 1956.—“*Trophurus*, a new tylenchid genus (Nematoda).” No. 129, pp. 191–195. [Dutch summary p. 195.]

(547a) From comparison of published data on ten methods of extracting nematodes from soil, Oostenbrink concluded that the two methods most satisfactory in time-saving and quantitative recovery were his elutriation method (Oostenbrink 1954) and the centrifuge method of Caveness & Jensen (1955) [for abstracts see Helm. Abs. 23, No. 448b and 24, No. 143g, respectively]. Due to lack of data, the methods of Cobb (1924 to 1925), Christie & Perry (1951) and Seinhorst (1955 and 1956) were not included. R.D.W.

(547b) *Trophurus* n.g. is a monodelphic member of the Tylenchinae with a terminal oesophageal bulb, a head free from annulation and with a much swollen portion of cuticle at the tail end. It is closest to *Chitinotylenchus* (although this genus is imperfectly described) in that the basal knobs of the spear show a tendency to be separated from the rest of the spear. There are also resemblances to *Tylenchorhynchus* although this is didelphic. The type is *Trophurus imperialis* n.sp. and this and *T. sculptus* n.sp. are described and figured. The latter species is smaller and fatter than the former and has coarser annulation. Both species were found in Holland, the latter also in California. Nothing is known of their bionomics. J.B.G.

548—Veterinär-Medizinische Nachrichten. Marburg.

- a. LÄMMLER, G., 1956.—“Die parasitäre Gastroenteritis der Schafe und Ziegen und ihre Bekämpfung mit Phenothiazin.” Year 1956, No. 1, pp. 28–40.
- b. DIETRICH, W., 1956.—“Wurmbekämpfung mit Terit bei Kleintieren.” Year 1956, No. 1, p. 50.
- c. LÄMMLER, G., 1956.—“Die Chemotherapie der Fasciolose. Zugleich ein Beitrag zur experimentell-chemotherapeutischen Untersuchungsmethodik.” Year 1956, No. 2, pp. 125–126.

(548a) Lämmler presents a survey of the literature (with 71 references) on the treatment of parasitic gastro-enteritis in sheep and goats with phenothiazine. He concludes that 0.4 gm. to 0.5 gm. per kg. body-weight is the optimum dosage, and that a mixture of one part phenothiazine and nine parts salt as a lick gives favourable results. A combined application of phenothiazine and trace elements, particularly copper and cobalt, has shown promise. A.E.F.

(548b) Dietrich supplements his earlier favourable report on Terit as an anthelmintic in small animal practice [for abstract see Helm. Abs., 21, No. 528e] with further details of this treatment. Dogs must be given capsules on an empty stomach and should fast for five hours after treatment. Dead worms will then be passed in a normal stool some eight hours later. If this regimen is strictly observed untoward effects will not occur. A.E.F.

(548c) [This is an author's abstract of a paper which appeared in *Arzneimittel-Forschung*, 1955, No. 5, pp. 497–502. For abstract see Helm. Abs., 24, No. 349a.]

549—Veterinaria. Milan.

- a. PANINA, G., 1956.—“Stato attuale della terapia antielmintica.” 5 (3), 116–119. [English, French & German summaries p. 119.]
- b. OCCHIPINTI, G., 1956.—“Il cloridrato di emetina nella strongilosi polmonare ovina.” 5 (5), 206. [English, French & German summaries p. 206.]

(549b) Emetine hydrochloride gave a high rate of cure of lungworm disease in sheep when injected deep into the thigh at the rate of 3 c.c. of a 1% solution per 10 kg. body-weight, as used by Durbin [and recommended by Turunova; for abstracts see *Helm. Abs.*, 21, No. 230cu and 18, No. 281n]. If necessary this treatment was repeated once or twice at intervals of four days. Animals which were not cured showed signs of prostration, salivation and asphyxia.

M.MCK.

550—Veterinaria. Sarajevo.

- a. ŠENK, O., 1956.—“*Cyathocephalus truncatus*, Pallas—uticaj na rasplodne elemente potočnih pastrmki (*Salmo trutta fario*).” 5 (4), 607–615. [English summary p. 607.]

(550a) Incompletely developed and discoloured eggs or white eggs surrounded by a turbid fluid in the ovary of *Salmo trutta fario* resulted from heavy infections of *Cyathocephalus truncatus*. Spawning was late, incomplete or absent. The eggs developed more slowly, there were greater losses in eggs and fry and the young fish were under weight, although equal in size to those from uninfected trout.

G.I.P.

551—Veterinaria Italiana.

- a. AIROLDI, M. & BELLÌ, L., 1956.—“Contributo allo studio dei danni economici provocati dall'idatidosi nei bovini.” 7 (12), 1209–1215.

(551a) Hydatid cysts were found in 1,811 of 11,707 adult cattle slaughtered at the public abattoir of Rome between 1953 and 1955. The rejected lungs and livers would have been equivalent to 4,884 kg. of healthy lungs and 6,816 kg. of healthy livers. Airoidi & Belli estimate that in the animals slaughtered in Rome this parasite accounts for the annual rejection of viscera worth about 20 million lira.

M.MCK.

552—Veterinariya.

- a. NEKLYUDOV, V. N., BOLKHOVITINOV, D. V. & SOMINSKI, Z. F., 1956.—[Pathogenesis of *Haemonchus* infestation in sheep.] 33 (7), 66–69. [In Russian.]
- b. GARKAVI, B. L., 1956.—[Lead arsenite tested against *Moniezia* in sheep.] 33 (9), 41–42. [In Russian.]
- c. IVASHKOV, I., 1956.—[Chlorophos tested against *Parascaris* in horses.] 33 (10), 51–52. [In Russian.]
- d. GADZHIEV, K. S., 1956.—[Acute fascioliasis in sheep in Mugan Plain, Azerbaijan S.S.R.] 33 (10), 61. [In Russian.]
- e. LEGANTSEVA, V. I., TRONIN, A. A. & SILIN, S. I., 1956.—[Prevention of lung diseases in sheep.] 33 (10), 71–73. [In Russian.]
- f. ANTIPIN, D. N., 1956.—[Anthelmintic measures during the stall period of livestock maintenance.] 33 (11), 8–10. [In Russian.]
- g. SHULTS, R. S. & BONDAREVA, V. I., 1956.—[The organization of measures for the control of coenuriasis and echinococcosis.] 33 (11), 24–28. [In Russian.]
- h. KORNIENKO, Z. P., TENDETNIK, Y. Y. & CHARIEV, O. C., 1956.—[Use of the fungus *Arthrobotrys oligospora* for killing strongyle larvae in horse faeces.] 33 (11), 74. [In Russian.]
- i. KARAMISHEVA, E. N., 1956.—[Treating parascariasis in foals and ascariasis in dogs with tansy.] 33 (12), 29–30. [In Russian.]

(552b) *Moniezia* infections in sheep were treated with tin arsenite in gelatin capsules and the effect was ascertained by faecal examination five days later. Six lambs, six weeks to three months old, received 0.04 to 0.06 gm. per kg. body-weight. Complete cure was confirmed by the autopsy of four lambs. A further 45 lambs, under one year old, 14 of which

were infected out of 25 examined, were cured by a dose of 0.5 gm. per animal. Two sheep out of 15 treated with 0.5 gm. of tin arsenite and 14 out of 20 treated with 1% copper sulphate solution at the usual therapeutic dose remained infected. The tin arsenite was harmless and even a 2 gm. dose was not toxic to two lambs aged three and six months. G.I.P.

(552c) Nine horses with naturally acquired *Parascaris* infections were treated by nasopharyngeal intubation of 15 mg. per kg. body-weight of chlorophos in 2% to 5% aqueous solution. All passed worms (1 to 36) two to four days later and no eggs were found on subsequent faecal examination, indicating 100% efficacy. Some of the horses also passed strongyles and *Oxyuris equi*. Following the intravenous injection of 5 mg. per kg., one horse passed four *Parascaris* and was negative at autopsy three days later. No abnormal effects due to the treatment were observed. The subcutaneous injection of 15 mg. per kg. body-weight in 10% aqueous solution cured a horse three years old, but not one thirteen years old. But subcutaneous injection is not recommended as it results in a hard swelling which develops into an abscess. G.I.P.

(552e) This article deals with the prevention of broncho-pneumonia [cause not specified] in ewes and lambs by a diet rich in carotin and a longer pasturing period. G.I.P.

(552f) Antipin points out that in order to eradicate helminth infections it is important to treat livestock during their winter stabling in the case of *Thelazia* in cattle, *Dictyocaulus* in sheep and cattle, and *Fasciola* and some other helminths in farm animals, where these hosts are themselves the only or main carriers of the infection into the spring. G.I.P.

(552g) Measures suitable for Kazakhstan against coenuriasis and echinococcosis in sheep include the worming of dogs, in spring and autumn, on and near sheep farms, and the separation from the flock of coenurus-infected sheep which should then receive an improved diet and therapeutic and surgical treatment. Sanitary and helminthological instruction of shepherds and veterinary workers and the safe disposal of infected carcasses and rejected organs are very important. G.I.P.

(552h) When 0.5% to 5% by weight of an *Arthrobotrys oligospora* preparation, containing spores, was added to 20 gm. samples of faeces from horses heavily infected with strongylids, most of the larvae were killed their numbers being reduced 22 to 407 times as compared with the controls to which no spores had been added. The greatest activity of the spores occurred on the 12th to 18th day. The results were not affected by the concentration of the fungus which spread and was active at a wide range of temperature and humidity. G.I.P.

(552i) Ascarids in 33 foals and 19 dogs were treated with an aqueous extract of the flowers and leaves of *Tanacetum vulgare* (1 kg. giving a litre of extract), in doses of either 0.5 ml. per kg. body-weight of the animal or 20 to 25 ml. per foal, for two consecutive days after an 18 to 24 hour starvation diet. The extract was administered to the foals by placing it on the base of the tongue by probe and to the dogs in gelatin capsules. In cases of a heavy infection it was followed by a laxative. No eggs were found in the faeces when examined for one month after dosing. G.I.P.

553—Veterinarski Glasnik. Belgrade.

- a. NEVENIĆ, V., ŠIBALIĆ, S. & CVETKOVIĆ, L., 1956.—[An outbreak of fascioliasis in sheep in north-east Yugoslavia.] 10 (1), 25–28. [In Serbian.]
- b. DIVLJANOVIĆ, D., 1956.—[Incidence of *Fasciola*, *Echinococcus*, *Dictyocaulus* and *Cysticercus* in cattle and sheep in the Valjevo district of Yugoslavia.] 10 (1), 66–67. [In Serbian.]
- c. DREŽANČIĆ, I. & WIKERHAUSER, T., 1956.—“O djelovanju proteolitskih anthelmintika (*Vermizyma* i *Nematolyta*) na askaride svinja.” 10 (2), 93–99. [German summary pp. 98–99.]

- d. MARJANOVIĆ, D., 1956.—[Hetrazan treatment of *Ascaris* infestation in dogs.] 10 (2), 116–117. [In Serbian.]
- e. BULJEVIĆ, S., 1956.—“Jedan redak i interesantan nalaz *Ascaris suum* u žučovodiina jetre kod svinje.” 10 (2), 120.
- f. CVETKOVIĆ, L., 1956.—“O jednom slučaju nalaza *Tetrathyridium variabile* kod kokoši.” 10 (5), 360–363. [French summary p. 363.]
- g. BULJEVIĆ, S., 1956.—“Invadiranost zaklanih životinj sa teritorije grada i sreza Pančeva sa *Cysticercus tenuicollis*om.” 10 (5), 385–387. [German summary p. 387.]
- h. WINTERHALTER, M., 1956.—“Suzbijanje parasitskih invazija.” 10 (6), 449–453.
- i. KNEŽEVIĆ, N. & BORDOŠKI, A., 1956.—“Teški oblik gastrita praseta prouzrokovan dejstvom *Gnathostoma hispidum* (Fedtschenko 1872).” 10 (6), 470–472. [German summary p. 472.]
- j. DIVLJANOVIĆ, D., PERIĆ, Ž. & LAZIĆ, M., 1956.—“Prilog poznavanju rasprostranjenosti telazija kod goveda na teritoriji sreza Valjevo.” 10 (6), 477–479. [French summary pp. 478–479.]
- k. JAŽEV, V., 1956.—[Liver-fluke disease in sheep in the former county of Prilep in 1955.] 10 (8), 614–617. [In Serbian.]
- l. DOBRENÖV, D., ČIRIĆ, L., NEVENIĆ, V., PETROVIĆ, K. & ŠIBALIĆ, S., 1956.—“Epizootija plućne strongilozе ovaca u Vojvodini 1954/55.” 10 (9), 659–661.
- m. BULJEVIĆ, S. & RENDIĆ, D., 1956.—“Prikaz jednog slučaja amidostomoze kod gusaka.” 10 (9), 700–701.
- n. NEVENIĆ, V. & ANGELOVSKI, T., 1956.—“Važnije invazione bolesti domaće stoke u Velikoj Britaniji i njihovo suzbijanje.” 10 (9), 701–705.
- o. MIKACIĆ, D., 1956.—“Kvantitativni izraz intenziteta parazitske invazije.” 10 (11), 852–855.
- p. KATUNARIĆ, M., 1956.—“Nekoliko slučajeva kliničke slike ehinokokoze kod goveda.” 10 (12), 930–933.
- q. MILIĆ, D., 1956.—“Parasitne bolesti domaćih životinja na teritoriji sreza Kolubarskog.” 10 (12), 933–936.

(553a) The authors describe an outbreak of fascioliasis in sheep. They draw particular attention to two cases with very pronounced ascites (25 and 27 litres of fluid). Altogether 117 sheep died (36.5%). Some of the cases were complicated by the presence of hydatid cysts and *Dictyocaulus filaria*. For treatment they used carbon tetrachloride. They also recommend treating the animals after they leave the pasture for wintering. C.R.

(553b) Divljanović reports the results of a survey carried out in Valjevo from the beginning of April until the end of August 1955, among 2,654 cattle (of all ages), 2,742 sheep and 3,345 lambs. He gives the numbers and percentages of animals infested with *Fasciola*, *Echinococcus*, *Echinococcus* and *Fasciola*, *Dictyocaulus* and *Cysticercus tenuicollis*. C.R.

(553c) The authors found that Vermizym and Nematolyt were effective against *Ascaris in vitro*. When it was given to pigs infected with *Ascaris* it had no effect and the ascarids were found to be still alive when the pigs were examined post mortem. C.R.

(553d) Marjanović used hetrazan against *Toxocara canis* in 60 dogs aged from four weeks to two years. He gave a daily dose of 10 mg. per kg. body-weight during three days and found it to be effective in 40 dogs (66.6%). C.R.

(553e) Buljević reports the occurrence of four cases of *Ascaris lumbricoides* in the bile-ducts of pigs, where it produced icterus and cholangitis chronica purulenta. C.R.

(553f) Cvetković describes a case of *Tetrathyridium variabile* in a four-month-old chicken near Belgrade. The total number of larvae found was 198, of which most were in the lungs. C.R.

(553g) Buljević reports the results of his survey carried out at the abattoir in Pančevo for about two years on the occurrence of *Cysticercus tenuicollis*. Out of 273 cattle, 1,033 pigs and 90 sheep, three (1.09%), 20 (1.93%) and two (2.22%) respectively were infected. In cattle the cysts occurred in the liver and mesentery, in pigs only in the liver and in sheep only in the mesentery. C.R.

(553h) Winterhalter, in this abbreviated version of his paper delivered to the veterinary association in Croatia, stresses the importance of control of parasitic diseases in domestic animals. Although the control of parasitic diseases is more complicated than that of infectious diseases, it is possible to save the lives of animals and to increase production. C.R.

(553i) The authors report a case of gastritis in a six-month-old pig which was caused by *Gnathostoma hispidum*. C.R.

(553j) In the district of Valjevo the authors found thelaziasis in 431 cattle out of 17,196 examined (2.5%). C.R.

(553k) Jazev describes the climatic conditions in the county of Prilep in 1955 and their influence on the development of fascioliasis. He stresses the great losses caused by *Fasciola* and hydatid in this area, which total over ten million dinars. C.R.

(553l) The authors describe an outbreak of lungworm disease in sheep in the Vojvodini district in 1954-55. They append the results of a questionnaire answered by veterinary surgeons in various districts from which it may be seen that the infestation varied from 10% to 90%. The value of the dead animals (20,020) was over 100 million dinars. C.R.

(553m) The authors report a case of *Amidostomum anseris* in geese in the Pančevo district of Serbia. C.R.

(553n) Nevenić & Angelovski, in this article, report on their visit to Great Britain and outline the more important parasitological problems. They also refer to the organization of the control of parasitic diseases in Britain. C.R.

(553o) Mikačić discusses the problems connected with the estimation of the intensity of parasitic diseases. He draws attention to helminthic composition in mixed infestations, the different reactions of young and old animals to helminths, and immunity. In his view parasitic disease is a complex of a large number of different factors, of which the most important is the number of parasites in the animal. C.R.

(553p) In this case note from his practice the author describes three clinical cases of hydatid in the liver and lungs of cattle. C.R.

(553q) Milić lists the commonest parasitic infestations in Kolubara County: fascioliasis, hydatidosis, dicrocoeliasis and lungworms in pigs and sheep; ascariasis in pigs; oxyuriasis in horses; neoascariasis and thelaziasis in cattle; and *Railletina echinobothridae*, *R. cesticillus* and *Hymenolepis carioca* in poultry. He also records the occurrence of *Paramphistomum cervi*, *Coenurus cerebralis* and *Chabertia ovina* in sheep, *Drepanidotaenia lanceolata* in geese, *Dipylidium caninum* and *Taenia pisiformis* in dogs, *Setaria equina*, *Habronema megastoma*, *Strongylus vulgaris*, *S. equinus*, *S. edentatus* and *Parascaris equorum* in horses, *Setaria labiatio-papillosa* in cattle, *Gnathostoma hispidum* and *Macracanthorhynchus hirudinaceus* in pigs and *Heterakis gallinae* in hens. In his view parasites cause heavy losses among animals and control demands planned action. C.R.

554—Veterinársky Časopis. Bratislava.

- a. SELECKÁ, V. & SELECKÝ, F., 1956.—“Príspevok k použitiu fenotiazínu v terénnej praxi.” 5 (1), 42–48. [German & Russian summaries pp. 47–48.]
- b. KAŠTÁK, V., 1956.—“Výsledky parazitologického prieskumu plotíc (*Rutilus rutilus*) teplého ramena Váhu u Piestan.” 5 (2), 123–125. [German & Russian summaries p. 125.]
- c. HALAŠA, M., HORVÁTH, J., ROŠKO, L. & LÜBKE, R., 1956.—“Príspevok k rozšírenosti a problematike helmintóz hospodárskych zvierat na Slovensku.” 5 (5), 340–351. [German & Russian summaries p. 351.]

(554a) The authors tested phenothiazine of the Czech Lederle and Avlon brands. They administered it to sheep in doses of 0.6 gm., 0.7 gm. and 1.0 gm. per os. They did not find any changes in the blood or temperature but there was a slight loss in weight in the experimental animals. The sheep were naturally infected with *Dictyocaulus filaria*, *Nematodirus* sp., *Haemonchus contortus*, *Moniezia* sp., *Trichostrongylus* sp., *Bunostomum trigonocephalum*, *Trichuris ovis*, *Strongyloides papillosus* and *Muellerius capillaris*. After the experiment only *D. filaria*, *M. capillaris* and *Nematodirus* sp. were found.

C.R.

(554b) Kašták reports the occurrence of *Philometra ovata* in *Rutilus rutilus* for the first time in Czechoslovakia, in the River Wag.

C.R.

(554c) The authors review the commonest helminths of domesticated animals in Slovakia. They draw particular attention to the occurrence of *Muellerius capillaris*, *Protostrongylus rufescens* and *Fasciola hepatica* in sheep. Fascioliasis in cattle is also increasing. They urge the necessity of prophylactic and control measures against other helminths which are responsible for a great amount of damage.

C.R.

555—Vie et Milieu. Paris.

- a. TRAVÉ, J., 1956.—“Le nématode phorétique *Cheilobus quadrilabiatu*s Cobb sur des Oribates (Acarie).” 7 (1), 110–112.
- b. CARON, J. & JARRY, D., 1956.—“Première contribution à l'étude des endoparasites des petits mammifères de Banyuls.” 7 (1), 116–120.
- c. CAMPANA-ROUGET, Y. & CHABAUD, A. G., 1956.—“Helminthes des environs de Banyuls. III. Sur trois espèces de *Cucullanus* (Camallanoidea, Nematoda) parasites des poissons.” 7 (2), 267–279.
- d. CHABAUD, A. G. & CAMPANA-ROUGET, Y., 1956.—“Helminthes de la région de Banyuls. IV. Filaire du flamant rose. Synonymie des genres *Striatofilaria* Lubimov et *Paronchocerca* Peters.” 7 (3), 350–356.

(555a) Travé found larvae of *Cheilobus quadrilabiatu*s adhering to two specimens of *Galumna carinata* in a collection of oribatid mites made in Haute Garonne.

S.W.

(555b) Caron & Jarry examined 70 small mammals, mainly *Apodemus sylvaticus*, for parasites in the Banyuls region. They record the presence of *Catenotaenia lobata*, *Hymenolepis fraterna*, *Protospirura muris*, *Trichuris muris* and *Syphacia obvelata*.

S.W.

(555c) *Cucullanus lophii* n.sp. from the fish *Lophius piscatorius* from the Mediterranean is characterized by very long spicules measuring 1.93 mm. and by the arrangement of the anal papillae. The first pair of pre-anal papillae is fairly far in front of the sucker and the third pair is nearer to the second pair than to the cloaca. Of the five pairs of ad-anal papillae, three are subventral, one is lateral and one is somewhat ventral to the others and level with the lateral pair. Of the four pairs of post-anal papillae the most anterior is subventral, the next pair is subdorsal, the next is lateral and the last is subventral. *C. hians* is redescribed from material from *Conger conger*, and *Stelmus praecinctus* Dujardin, 1845 is thought to be synonymous with it. Other species near to or belonging to *Cucullanus* which have been found in fishes of the suborder Apodes are discussed. Three female worms described from *Solea solea* closely resembled *C. heterochrous* and may be a variety of it, or a new species.

M.MCK.

(555d) Examination of three males of *Striatofilaria aerophila* (Linstow, 1906) Lubimov, 1927, from the rosy flamingo *Phoenicopterus ruber roseus* from the neighbourhood of Banyuls on the Mediterranean coast, showed that it is a synonym of *Filaria phoenicopteri* Annett, Dutton & Elliott, 1901. Assuming that the females bring forth microfilariae rather than eggs, this species shows the essential characters of *Paronchocerca* Peters, 1936. It follows that *Paronchocerca* is a synonym of *Striatofilaria* of which *S. aerophila* was type. The species now belonging to *Striatofilaria* are *S. phoenicopteri* n.comb. as type, *S. ciconiarum* n.comb., *S. sanguinis-ardeae* n.comb., *S. bambusicolae* n.comb., *S. tonkinensis* n.comb., *S. rousseloti* n.comb. and *S. pelecani*. These are listed with their synonyms.

M.MCK.

556—Virginia Journal of Science.

- a. SOMERVILLE, Jr., A. M. & YOUNG, Jr., V. H., 1956.—“Review of plant-parasitic nematodes found in Virginia.” [Abstract of paper presented at 34th Annual Meeting of the Virginia Academy of Science, Richmond, Va., May 9–12, 1956.] 7 (4), 259–260.
- b. HOLLOWAY, H. L., 1956.—“The Acanthocephala of Mountain Lake mammals.” [Abstract of paper presented at 34th Annual Meeting of the Virginia Academy of Science, Richmond, Va., May 9–12, 1956.] 7 (4), 285.
- c. CHENG, T. C., 1956.—“Taxonomic and morphological studies on the genus *Acanthatrium* (Trematoda Lecithodendriidae).” [Abstract of paper presented at 34th Annual Meeting of the Virginia Academy of Science, Richmond, Va., May 9–12, 1956.] 7 (4), 286.

(556a) In samples of plants and soil collected in 1958 from many parts of Virginia, fourteen species belonging to approximately 23 known plant-parasitic nematode genera were identified [but are not listed].

R.T.L.

(556b) For the first time the presence is noted in the Mountain Lake region, of *Moniliformis clarki* in *Tamias striatus*, *Centrorhynchus* sp. in *Procyon lotor lotor*, and *Echinopardalis macrurae* and *Centrorhynchus wardae* in *Spilogale putorius*. [*C. wardae* was described as new by Holloway in a thesis dated 1956. It is a nomen nudum as it has only appeared in a microfilm of the thesis. Under the International Rules of Nomenclature as emended in 1953 a microfilm is not a publication.]

R.T.L.

(556c) The original paper (not published) is said to contain a detailed study of the structure of the genital atrium and the morphology of the atrial spines which are considered to be the only reliable criteria for differentiating the species of *Acanthatrium*.

R.T.L.

557—Wiener Klinische Wochenschrift.

- a. QUAISER, K., 1956.—“Diagnostik und Therapie der Fasciola-Infektion des Menschen.” 68 (18), 349–352.

(557a) Quaiser describes a case of fascioliasis in an eight-year-old boy in Styria (Austria). The infection was diagnosed by complement fixation and confirmed by the finding of eggs in the bile. Treatment with emetine hydrochloride, 25 mg. per day for 10 days given intravenously, was successful.

A.E.F.

558—Wiener Tierärztliche Monatsschrift.

- a. KOTLÁN, A., 1956.—“Über die Rolle von Darmnematoden beim Zustandekommen bakterieller Infektionen nebst Bemerkungen über die Pathogenität von *Oesophagostomum dentatum*.” 43 (11), 658–664. [English, French & Italian summaries pp. 663–664.]
- b. WETZEL, R. & KERSTEN, W., 1956.—“Die Leberphase der Entwicklung von *Strongylus edentatus*.” 43 (11), 664–673. [English, French & Italian summaries pp. 672–673.]
- c. MATOFF, K., 1956.—“Kann eine Trichinellose durch Aufnahme von Darmtrichinellen zustande kommen?” 43 (11), 705–730. [English, French & Italian summaries pp. 727–729.]
- d. WHITLOCK, J. H., 1956.—“A description of a new dog lungworm, *Filaroides milksi* n.sp. (Nematoda, Metastrongyloidea).” 43 (11), 730–738. [French, German & Italian summaries p. 737.]

- e. KREIS, H. A., 1956.—"Beiträge zur Kenntnis parasitischer Nematoden. XIX. Parasitische Nematoden aus dem Indischen Elefanten—*Elephas maximus* L." 43 (11), 751-760. [English, French & Italian summaries p. 760.]
- f. SUPPERER, R., 1956.—"Ferkelkümern, Schweinemast, Beifuttermittel und Parasitenbefall." 43 (11), 760-773. [English, French & Italian summaries pp. 772-773.]
- g. BAJEZ, E., 1956.—"Zur Behandlung der Strongyloidose und der russartigen Dermatoze der Saugferkel mit 'Otrhomin'." 43 (12), 828-829.

(558a) Kotlán infected eight young pigs (aged between two and six months) with massive doses of *Oesophagostomum* larvae, the number varying between 23,000 and 190,000. In five cases typical symptoms of *Bacterium suispestifer* infection (swine paratyphoid) developed, with bacteraemia characterized by acute hyperaemic enlargement of the spleen. It is concluded that the mechanical effect of larval penetration into the mucous membrane of the intestine activates the bacteria already present: where no paratyphoid occurred it is assumed that *B. suispestifer* was not present in the intestine. It is pointed out that such massive *Oesophagostomum* infections are unlikely to occur naturally and that milder infections are unlikely to be serious. A.E.F.

(558b) Wetzel & Kersten gave doses of from 7,000 to 25,000 *Strongylus edentatus* to six foals and slaughtered them after varying intervals in order to study the development of the parasite in the liver of the host. In the animals killed six, nine and eleven days after infection third-stage larvae were found in the liver; in those killed after 19, 36 and 66 days, fourth-stage larvae were recovered. It is concluded that larvae penetrate the intestinal wall and reach the liver by the portal system where they undergo the third ecdysis in nodules in the parenchyma between the eleventh and eighteenth days after infection. The larvae then migrate in the parenchyma, increasing in size, until they finally reach the lining of the abdominal cavity. During the liver phase the larvae give rise to colicky and other symptoms. A.E.F.

(558c) Matoff has carried out a series of experiments in order to determine whether ingestion of adult *Trichinella* will produce an infection. Fifteen rats, two dogs, seven guinea-pigs and three rabbits were fed with the whole intestine, intestinal contents or mucosa of trichinose mice, guinea-pigs and rats infected from six to 15 days previously: infections were obtained in nine of the rats, both dogs, two guinea-pigs, and none of the rabbits. Other experiments showed that "intestinal" *Trichinella* aged from one to five days sometimes pass unharmed through the stomach of the host, reach the intestine and can cause light infections. These results show that infected rats can infect other rats at any time and the importance of the rat in maintenance and spread of infection is confirmed. A.E.F.

(558d) Whitlock describes and figures *Filaroides milksi* n.sp. from the lungs of a dog. The new species differs from *F. osleri* in that the blade of the spicules is smooth while that of *F. osleri* has transverse ridges, and in the shape of the female tail. It is smaller than *F. gordius*, has a less conspicuous excretory pore, and the mouth structure differs. Whitlock recognizes three genera in the subfamily Filaroidinae, viz., *Metathelazia*, *Parafilaroides* and *Filaroides*. He redefines *Filaroides*. A.E.F.

(558e) Kreis describes and figures *Murshidia falcifera* (Cobbold, 1882) and *Quilonia sedecimradiata* n.sp. found at post-mortem in Indian elephants from a Swiss circus. The new species is larger than other *Quilonia* species from Indian elephants and also differs in the shape of the anterior end, in length of spicules and in the size of the gubernaculum. A.E.F.

(558f) Supperer points out that commercial food supplements for pig rearing are being increasingly regarded by farmers as all-purpose remedies. Adequate nutrition is not the only requirement for successful pig rearing; heavy parasitic infections cause poor development in young pigs and must be controlled before the animals are put on fattening diets. The general principles for raising animals comparatively free of parasites are discussed. A.E.F.

(558g) Bajez has treated Strongyloides infection in very young pigs with subcutaneous injections of a solution of Otrhomin Weidner [no information about the drug is given]. Piglets two weeks old were given 3 c.c. to 5 c.c. of the solution followed, after an interval of four days, by a little Otrhomin powder orally twice daily for three days. After this treatment ova were found only sporadically in the faeces and the clinical condition of the animals improved. A.E.F.

559—Wissenschaftliche Zeitschrift der Ernst Moritz Arndt-Universität Greifswald.

- a. PETZOLD, H. G., 1956.—“Zur Fauna des Küstengrundwassers der Insel Hiddensee. II. Holotriche Ciliaten, Nematoden und Gastrotrichen aus dem Küstengrundwasser.” 5, Mathematisch-naturwissenschaftliche Reihe, (5/6), 429–433.

(559a) Under the auspices of the University of Leipzig Zoological Institute a study was made in 1954 of the fauna of subsurface coastal waters of the Island of Hiddensee (off the Baltic coast of Germany). Petzold lists the 16 species of nematodes found. All have been recorded previously from this or similar areas with the exception of *Chromadora demaniana* which has so far only been found near the Black Sea. A.E.F.

560—Wissenschaftliche Zeitschrift der Humboldt-Universität zu Berlin.

- a. KALBE, I., 1956.—“Über das Verhalten der Eier von *Ascaris lumbricoides* L. in verschiedenen Bodenarten bei unterschiedlichen klimatischen Bedingungen.” 5, Mathematisch-naturwissenschaftliche Reihe, (1), 21–27. [English, French & Russian summaries pp. 26–27.]

(560a) Kalbe has carried out a series of experiments in order to determine the resistance of *Ascaris lumbricoides* ova to moisture, dryness and sunlight, at varying temperatures. The results show that, at temperatures varying between 5°C. and 24°C., all ova (both on the surface and at a depth of 3 cm.) die off within 12 weeks in dry soil. Mortality among ova in or on garden soil was a little less than among those in or on sand. Embryonation of ova after 12 weeks in the open under natural conditions took more than twice as long as in the case of ova kept under laboratory conditions. Of ova kept in garden soil at temperatures ranging between -16°C. and +4°C. the following percentages were killed: (i) on dry soil 28% on the surface, 24% at a depth of 3 cm.; (ii) on damp soil 42% on the surface, 40% at 3 cm. The mortality among ova in sand varied very little from that of ova in garden soil. Ova exposed to desiccation plus sunlight were all killed after four hours. Controls showed a normal mortality of 8%. A.E.F.

561—Yearbook of Agriculture. U.S. Department of Agriculture.

- a. NORDQUIST, A. V. & PALS, C. H., 1956.—“Economic losses from animal diseases and parasites.” Year 1956, pp. 11–14.
- b. SCHWARTZ, B., 1956.—“Parasites that attack animals and man.” Year 1956, pp. 21–28.
- c. SCHOENING, H. W., SCHWARTZ, B., KNIPLING, E. F. & LEE, A. M., 1956.—“Causes of disease.” Year 1956, pp. 29–40.
- d. SCHOENING, H. W., SCHWARTZ, B. & LINDQUIST, A. W., 1956.—“How diseases and parasites are spread.” Year 1956, pp. 40–45.
- e. SIMMS, B. T., 1956.—“Protection against transmissible diseases and parasites.” Year 1956, pp. 54–60.
- f. FOSTER, A. O., 1956.—“Special principles of parasite control.” Year 1956, pp. 75–80.
- g. FOSTER, A. O., 1956.—“Chemotherapeutic agents for internal parasites.” Year 1956, pp. 80–85.
- h. PRICE, E. W., 1956.—“Liver flukes of cattle and sheep.” Year 1956, pp. 148–153.
- i. PORTER, D. A. & KATES, K. C., 1956.—“Tapeworms and bladderworms.” Year 1956, pp. 153–156.
- j. PORTER, D. A., HERLICH, H. & VEGORS, H. H., 1956.—“Roundworm parasites of the digestive tract of cattle.” Year 1956, pp. 284–290.
- k. RUBIN, R., 1956.—“Verminous pneumonia of cattle.” Year 1956, pp. 290–291.
- l. LUCKER, J. T., 1956.—“Verminous dermatitis.” Year 1956, pp. 298–300.
- m. ANDREWS, J. S., 1956.—“Lung parasites of swine.” Year 1956, pp. 335–338.

- n. ANDREWS, J. S. & TROMBA, F. G., 1956.—“Kidney worms of swine.” Year 1956, pp. 338-340.
- o. SPINDLER, L. A., 1956.—“The large intestinal roundworm.” Year 1956, pp. 340-342.
- p. SPINDLER, L. A., 1956.—“The intestinal threadworm.” Year 1956, pp. 343-344.
- q. KATES, K. C., 1956.—“Thorn-headed worm of swine.” Year 1956, pp. 344-345.
- r. KATES, K. C., ALLEN, R. W. & TURNER, J. H., 1956.—“Roundworms of the digestive tract.” Year 1956, pp. 389-399.
- s. ALLEN, R. W., 1956.—“Nodular worms of sheep and goats.” Year 1956, pp. 399-400.
- t. GOLDBERG, A., 1956.—“Lungworms in sheep and goats.” Year 1956, pp. 401-403.
- u. GARDINER, J. L., 1956.—“Tapeworms of chickens and turkeys.” Year 1956, pp. 484-486.
- v. GARDINER, J. L., 1956.—“Roundworms.” Year 1956, pp. 486-490.
- w. WEHR, E. E. & FARR, M. M., 1956.—“Parasites affecting ducks and geese.” Year 1956, pp. 500-502.
- x. ENZIE, F. D. & PRICE, E. W., 1956.—“Internal parasites of dogs and cats.” Year 1956, pp. 503-517.
- y. LUND, E. E., 1956.—“Parasites of the domestic rabbit.” Year 1956, pp. 563-567.
- z. GORHAM, J. R., 1956.—“Diseases and parasites of foxes.” Year 1956, pp. 573-575.

562—Zaadbelangen. 's-Gravanhage.

- a. POOS, J. A. J., 1956.—“Rogge met aaltjes-resistentie.” 10 (1), 3-5.

(562a) “Reup” or “reupziekte” (there are many other local names) is a disease of rye caused by *Ditylenchus dipsaci*. It occurs in most of the rye-growing districts of south-east Netherlands and is most wide-spread in North Brabant, Limburg, Gelderland and Overijssel. It also occurs in Belgium and Germany. Soils of a yellowish colour with little humus and some clay are most likely to be affected. Poos describes the symptoms of the disease, which include a stunted appearance, with poor root development and first dark green and later yellow leaves: some plants die off completely. Since there is no known control method research has been directed to the development of resistant races of rye. At the C.I.V. Heertveld nursery a cross between Ottersumse (resistant, but with low yield and poor straw) and Petkuser (non-resistant but of good yield) has been obtained which shows promise. The new race, which is called Heertveld, has been compared with Ottersumse in laboratory tests with the following results: of 189 Ottersumse plants 34% were not affected and 43% only lightly affected; of 188 Heertveld the figures were 25% and 50% respectively. Although the number of resistant plants is not yet great, it is higher than with other races. A field test showed that Heertveld is resistant and, even when attacked, has a possible power of recovery.

A.E.F.

563—Zeitschrift für die Gesamte Hygiene und ihre Grenzgebiete.

- a. KALBE, I., 1956.—“Parasitologische Abwasseruntersuchungen in einigen Städten der Deutschen Demokratischen Republik.” 2 (5), 334-343.

(563a) Kalbe has examined the sewage of eleven East German towns for helminth ova. He shows in tabular form the numbers of ova of *Ascaris*, *Taenia*, *Enterobius*, *Trichuris*, *Strongyloides* and *Oesophagostomum* per litre of sewage. In all but two cases he finds that untreated or insufficiently treated sewage is used to irrigate arable and pasture land: the helminth ova present (up to 38 *Ascaris* ova, 15.8 *Strongyloides* and 15.2 *Oesophagostomum* per litre are recorded) are a dangerous source of infection to both man and animals. The two exceptions are Arnstadt, where no ova were found at all, and Frankfurt on the Oder, where the only ova recorded were one *Ascaris* and one *Taenia* per litre of sewage.

A.E.F.

564—Zeitschrift für die Gesamte Innere Medizin und ihre Grenzgebiete.

- a. MÄHRLEIN, W., 1956.—“Zur Kenntnis der durch Trichinose bedingten Reaktionen des Sternalmarkes.” 11 (21), 1003-1004.

(564a) Mahrlein describes the changes in the thoracic bone marrow which occur in trichinelliasis and can affect eosinophil and neutrophil cells.

A.E.F.

565—Zeitschrift für Kreislaufforschung.

- a. COSTEAS, F. & SATRAZEMIS, S., 1956.—“Eine Echinokokkus-Zyste der rechten Nebenniere mit klinischen Verlauf eines Phäochromozytoms.” **45** (13/14), 495–499.

(565a) Costeas & Satrazemis describe a case of hydatid cyst in the right suprarenal of a 39-year-old woman which resembled clinically a pheochromocytoma. The patient recovered after surgical removal of the cyst. The authors consider this case to be the first of its kind.

A.E.F.

566—Zeitschrift für Parasitenkunde.

- a. FAHMY, M. A. M., 1956.—“Studies on *Morganiella talpae* and the taxonomic consideration of the genus *Morganiella* (Nematoda, Trichostrongylidae).” **17** (5), 346–348.
- b. BOCH, J., 1956.—“Der Einfluss des Alters auf die Verwurmung von Hunden, Katzen und Füchsen.” **17** (5), 349–359.
- c. PFLUGFELDER, O., 1956.—“Abwehrreaktion der Wirtstiere von *Polymorphus boschadis* Schr. (Acanthocephala).” **17** (5), 371–382.
- d. STEIN, G., 1956.—“Weitere Beiträge zur Biologie von *Sphaerularia bombi* Léon Dufour 1837.” **17** (5), 383–393.
- e. FAHMY, M. A. M., 1956.—“An investigation on the life cycle of *Nematospiroides dubius* (Nematoda: Heligmosomidae) with special reference to the free-living stages.” **17** (5), 394–399.

(566a) Fahmy redescribes *Morganiella talpae* (Morgan, 1928) from specimens recovered from three out of fifty moles, *Talpa europaea* (the only known host) trapped in Berwickshire. Since *Morganiella* had already been used for an insect by Tonnoir & Edward in 1927, Fahmy proposes *Morganostrongylus* n.g. for *M. talpae*, which differs from *Viannia morenishi*, reported from the same host in Scotland, in size of ova, shape of the tail in the female and the shape of the spicules.

A.E.F.

(566b) Boch reviews earlier work on age immunity to helminths in small carnivores and records the results of his own studies. He found that age has no effect on cestode infections in cats and dogs: there is no resistance nor does an earlier infection confer immunity. This is explained by the fact that cestodes hardly affect the host tissue, the metabolic products of the worms and absorption of food from the host's intestine being responsible for the injurious effects. Both *Strongyloides* and *Capillaria plica* occur in foxes of all ages. Cats and dogs frequently get rid of their *Toxocara* infections spontaneously when eight to nine months old. It is not yet clear whether this is due to a natural resistance acquired with sexual maturity or to an antigen-antibody reaction.

A.E.F.

(566c) Pflugfelder has been unable to discover any defence mechanism in *Gammarus* infected with larvae of *Polymorphus boschadis*. In the intestine of the duck, the final host, distinctive nodules are formed with fibrils of connective tissue running vertically to the surface of the parasite. Further defence reactions such as necrosis, giant cells and fibril mantles do not occur until the parasite is dead. The reaction of the duck's intestine is specific to this parasite.

A.E.F.

(566d) Stein supplements the earlier studies of Hattingen [for abstract see No. 568a below] on the bionomics of *Sphaerularia bombi* in the Bonn district. He records the humblebees *Bombus hypnorum* and *Psithyrus rupestris* as new host species. Under natural conditions bees usually harbour from four to six parasites but as many as 30 have been recovered from one host. First larvae were recovered in late April but times of infection varied greatly—adults with no ova or larvae were found at the beginning of June. The behaviour of infected bees was studied under artificial conditions and two generations of parasites were observed in a single year. During the host's winter sleep development of the parasite is inhibited. Larvae could be maintained for over a year on agar cultures.

A.E.F.

(566e) Fahmy describes the free-living stages of *Nematospiroides dubius*. Larvae hatched from ova incubated at 26°C. after about 20 hours. Ten hours after hatching larvae were lethargic for a further ten hours, when the second stage was reached. This stage lasted for

twelve hours and was followed by the third stage, which was reached 48 to 56 hours after hatching. Larvae were fed to laboratory mice and eggs were recovered from the faeces twelve days later: the complete life-cycle thus took 16 days. Infection persisted in the mice for two months after which they were killed and mature *N. dubius* recovered.

A.E.F.

567—Zeitschrift für Tropenmedizin und Parasitologie.

- a. LÄMMLER, G., 1956.—“Die Chemotherapie der Fasciolose. II. Mitteilung. Über vergleichende experimentell-chemotherapeutische Untersuchungen an der Leberegelkrankung des Kaninchens.” 7 (3), 289–311. [English summary p. 309.]
- b. MIMIOGLU, M. & AKYOL, M., 1956.—“Über das Vorkommen von Hakenwürmern und anderen Wurmparasiten in der Provinz Hatay (Türkei).” 7 (3), 311–316. [English summary p. 316.]
- c. DINNIK, J. A. & DINNIK, N. N., 1956.—“Observations on the succession of redial generations of *Fasciola gigantica* Cobbold in a snail host.” 7 (4), 397–419. [German summary p. 418.]
- d. MINNING, W. & MCFADZEAN, J. A., 1956.—“Serologische Untersuchungen bei tierischen und menschlichen Filariosen mit Antigenen von *Dirofilaria immitis* und *Setaria cervi*. ” 7 (4), 419–434. [English summary pp. 433–434.]

(567a) After an extensive review of the literature on the chemotherapy of fascioliasis, Lämmler describes his own series of experiments in treating *Fasciola hepatica* infection in rabbits. The substances tested were hexachlorethane, carbon tetrachloride, Filmaron oil, tartar emetic, emetine, and two antimony compounds. Although carbon tetrachloride had greater therapeutic breadth it is not considered to be so suitable as hexachlorethane which is considered to be the remedy of choice in veterinary medicine. Emetine was found to be ineffective and the other substances tried were not considered to be promising.

A.E.F.

(567b) Mimioğlu & Akyol report on the examination for helminths of 305 inhabitants of various villages in the Turkish province of Hatay. The helminths found, and the number of persons infected with each, were: *Ancylostoma duodenale*, 143; *Ascaris lumbricoides*, 158; *Hymenolepis nana*, 9; *Taenia*, 20; *Trichuris trichiura*, 75; *Enterobius vermicularis*, 13; *Trichostrongylus*, 2 (said to be the first records of this parasite in man in Turkey). The percentage hookworm infection in the different villages varied between 12.5 and 88.8.

A.E.F.

(567c) Dinnik & Dinnik describe fully, with illustrations, the development of *Fasciola gigantica* in experimentally infected *Limnaea natalensis caillaudi*. About 790 snails were used, each being exposed to one or three to five miracidia. Only one to six rediae developed in each sporocyst. Several generations of rediae were produced, all of which showed alternating phases of development; the germinal cells gave rise firstly to daughter rediae, then to cercariae and finally to both rediae and cercariae. The number of daughter rediae produced decreased in successive generations.

S.W.

(567d) Minning & McFadzean have investigated the complement fixation reaction of an alcoholic whole antigen of *Dirofilaria immitis* against sera from dogs with homologous infection, from dogs infected with *D. repens* and from monkeys with *D. aethiops*. During the prepatent period all animals had a positive reaction; during the patent period the reaction was sometimes negative even when microfilariae were present in the blood. *D. immitis* antigen treated with acetone or ether was not so suitable as whole alcohol extract. A *Setaria cervi* antigen was shown to be suitable for diagnosing filaria infections in man.

A.E.F.

568—Zentralblatt für Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene. Abteilung 2.

- a. HATTINGEN, R., 1956.—“Beiträge zur Biologie von *Sphaerularia bombi* Léon Dufour (1837).” 109 (9/12), 236–249.

(568a) Hattingen records *Sphaerularia bombi* for the first time from *Bombus agrorum*, *B. soroensis proteus*, *Psithyrus campestris* and *P. vestalis* as well as from other *Bombus* spp. known to be hosts. *S. bombi* was never found in *Osmia* or in wasps even in heavily infected areas.

A severe winter reduces infection in the following year. Since queen bees operate in a very circumscribed area infection is strongly localized. Larvae remain in the body-cavity of queen bees only for ten to fourteen days; they emerge via the anus either actively or with the faeces. Larvae are found in the midgut and the musculature. The effect of *Sphaerularia* infection on the gonads of the queen bee is described: even a very slight infection seems to inhibit reproduction.

A.E.F.

569—Zhurnal Obschei Biologii.

- a. MAKAROV, P. V., 1956.—[Investigation of gametogenesis in the horse ascaris in conjunction with the problem of reduction division.] **17** (3), 185–201. [In Russian.]
- b. MYUGE, S. G., 1956.—[The trophic characteristics of *Meloidogyne incognita*.] **17** (5), 396–399. [In Russian: English summary Suppl. p. 6.]

(569a) Makarov describes and illustrates the various stages in spermatogenesis and oogenesis in *Parascaris equorum* using both results from his own study of stained sections of the genital glands and observations already recorded in the literature. He also describes the changes in the ribonucleic acid content during division and the differences in the maturation divisions in the univalens and bivalens races of *P. equorum*.

G.I.P.

(569b) Myuge tested the reaction to *Meloidogyne incognita* of cucumber, tomato and five other cultivated plants. There was an increase in respiration in galled over healthy roots, the respiratory coefficients being 0.8, 0.6 and 0.7 for healthy roots, firm galls and disintegrating galls respectively. The absorption of oxygen for the three types of tissue was 0.45, 1.53 and 0.65 cu.m. per gm.-hour. Respiratory enzymes and proteolytic enzymes were also increased in the galls as compared with healthy tissue. Increased amino-acids in the giant cells suggest that the nematodes break down proteins more quickly than they absorb the resultant products. Histochemical tests for heteroauxin in galls and biological tests for auxin in ether extracts from galls both gave negative results, suggesting that gall formation is not due to either of these groups. Toxins extracted from galls hindered the growth of bean radicles and, when placed in gelatin blocks on bean roots, resulted in the formation of tumours in 12 hours. It is concluded that the growth of galls is caused by toxins formed as a result of the interaction between nematodes and plant tissues.

M.T.F.

570—Zoologica Polonica.

- a. SENIÓW, A., 1956.—“Protein spectrum in the course of experimental trichinosis in guinea pigs.” **7** (1), 35–43. [Polish & Russian summaries pp. 41–43.]

(570a) Seniów infected guinea-pigs with about 530 *Trichinella spiralis* larvae each and studied, by paper microelectrophoresis, the serum proteins of the heart blood during the intestinal, migratory and muscle phases. The levels of total protein, albumin and α , β and γ -globulins before the infection and 6, 15, 26, 42, 65 and 133 days after are given. The pronounced increase in γ -globulin occurred during the intestinal phase and the level fell during the stage of muscular invasion. The β -globulins decreased both at the intestinal stage and at the onset of muscular invasion falling, by the 133rd day, to less than half the initial level. The results are compared with those of other workers.

S.W.

571—Zoologicheski Zhurnal.

- a. USHAKOV, B. P., 1956.—[Thermostability of the muscles of the *Mytilus*-species and leeches in relation to the environment of a species.] **35** (7), 953–965. [In Russian: English summary Suppl. p. 3.]
- b. DUBININA, M. N., 1956.—[Hyperparasitism of the metacercaria of *Tetracotyle variegata* (Creplin) in ligulids.] **35** (8), 1139–1145. [In Russian: English summary Suppl. pp. 5–6.]
- c. CHERNISHENKO, A. S., 1956.—[On the parasite fauna of the indigenous relic fishes.] **35** (8), 1261. [In Russian.]

- d. OKOROKOV, V. I., 1956.—[A new species of cestode, *Tatria mathevossianae* (fam. Amabiliidae) from *Podiceps ruficollis* (Pallas).] 35 (9), 1299–1302. [In Russian: English summary Suppl. p. 3.]
- e. LUKIN, E. I., 1956.—[On the occurrence in the U.S.S.R. of an interesting species of leech, *Boreobdella verrucata* (Fr. Müller).] 35 (9), 1417–1419. [In Russian: English summary Suppl. p. 14.]
- f. DAVTYAN, E. A., 1956.—[Pathogenicity of different species of *Fasciola* and its variability depending on the developmental conditions of the parthenogenetic stages.] 35 (11), 1617–1625. [In Russian.]
- g. DUBNITSKI, A. A., 1956.—[Fate of adult intestinal helminths in the case of cannibalism in carnivorous animals.] 35 (11), 1626–1628. [In Russian.]
- h. KOSHEVA, A. F., 1956.—[Effect of *Ligula intestinalis* and *Digramma interrupta* (Cestoda) on fish.] 35 (11), 1629–1632. [In Russian.]
- i. BEREZANTSEV, Y. A., 1956.—[Data on the natural foci of trichinelliasis.] 35 (11), 1730–1732. [In Russian.]
- j. FILIPEV, I. N., 1956.—[A new hairworm, *Parachordodes barabashi* Filipev n.sp. (Nematomorpha) from the Medni Island (Komandor Island).] 35 (12), 1906–1907. [In Russian: German summary Suppl. pp. 13–14.]

(571b) During her recent work on ligulids, Dubinina found *Tetracotyle variegata* metacercariae (larvae of *Cotylurus pileatus*) parasitizing plerocercoids of *Ligula colymbi* in the fish *Cobitis taenia* and less frequently in *Gobio gobio*. *T. variegata* also occurred once in *L. intestinalis* and twice in *Digramma interrupta* from the bream. The metacercariae in the ligulids lacked cysts and were somewhat longer than those found directly in fish. To explain the strong infection of *Ligula colymbi* in the complete absence of *T. variegata* in *Cobitis taenia* itself, it is suggested that the metacercariae perish on entering *C. taenia* unless *Ligula* plerocercoids are present in which the metacercariae then lodge in the subcutaneous layer and more rarely in the parenchyma. G.I.P.

(571c) In 46 *Umbra krameri* from the Dniester estuary, Chernishenko found *Diplostomulum clavatum* in 14, *Raphidascaris acus* in 17 and a specimen of *Azygia lucii* in one. Although *U. krameri* is an indigenous relic fish, the parasites found in it are only those now widely distributed in the Dniester. G.I.P.

(571d) *Tatria mathevossianae* n.sp. is described and figured from *Podiceps ruficollis* in Lake Chernoe in the Chelyabinsk region. It has 12 testes and 16 scolex hooks which are 68 μ long, whereas in the six known species of *Tatria* the number of testes ranges from 6 to 9, the number of hooks from 10 to 14 and the size of hooks from 19 μ to 50 μ in five of the species, while in *T. skrjabini* they are 171 μ long. G.I.P.

(571f) An experimental study was made of (i) the relative pathogenicity of *Fasciola gigantica* and *F. hepatica* and (ii) the change in infectivity of adolescaria with the temperature of their development. (i) *F. gigantica* was less infective but far more pathogenic to sheep and rabbits than *F. hepatica*. All the sheep infected with 250–300 *F. gigantica* adolescaria died, although their livers contained only 33–265 flukes, while those infected with 300–1,000 *F. hepatica* adolescaria developed only chronic infections, although their livers contained 122–870 flukes. *F. gigantica* produced the opposite results in bovines and should be considered specific to that group. (ii) Rabbits infected with 100 *F. hepatica* adolescaria each, harboured the same numbers of flukes, but the adolescaria which had developed at 22–23°C. (in 33 to 34 days) were far more pathogenic through their greater viability than those developed at 15–17°C. (in 64 to 68 days). In sheep on the other hand, 300 adolescaria which had developed at 23–24°C. (in 65 to 70 days) were lethal, but those which had developed at 29–32°C. (in 30 to 32 days) caused chronic infections only. Thus, although the adolescaria developed more quickly at the higher temperature, their viability was lower showing that the optimum temperature must be determined by the number and activity of the larvae produced rather than the shortness of their development. G.I.P.

(571g) It is shown that in cannibalism among carnivorous animals, adult intestinal worms when taken into the new host can, in some cases, survive and lay eggs. When live worms collected from fox carcasses were given, in meat or gelatin capsules, to dog pups and foxes, *Alaria alata* survived in 4 out of 27 animals, *Diphyllbothrium latum* in 1 out of 3, *Uncinaria stenocephala* in 8 out of 11 and *Toxascaris leonina* in 3 out of 4. Similar experiments with *Toxocara canis*, *Mesocestoides lineatus* and species of *Taenia* were unsuccessful in 8, 4 and 6 animals, respectively. G.I.P.

(571h) The infection of bream with *Ligula intestinalis* and *Digramma interrupta* was 86-100% for one and two-year-old fish, 30.1% for three-year-old fish and decreased progressively to almost nil for seven-year-old fish. This decrease was due to the death of worms after two years and the decreasing tendency with age for the fish to feed on plankton. In infected fish the internal organs were deformed, the intestinal wall became transparent and the liver and gonad tissue disintegrated, no fat was present and the average haemoglobin content of the blood was 23.5% as compared with 48.1% in uninfected fish. G.I.P.

(571i) *Parachordodes barabashi* n.sp. is described and figured from one male found in 1932 on the Komandor Island. It is nearest to *P. tolosanus* but possesses numerous small caudal spines and a different cuticular structure. In *P. barabashi* the areoles on the dorsal side of the body are 12 μ to 17 μ long and 10 μ to 12 μ wide with 5, 6 or 7 corners without interareolar spaces. On the ventral side there is an additional type of areole, which is more prominent, with a strongly light-refractive band at the base, and varying from 15 μ to 22 μ in length and from 6 μ to 22 μ in width. This is the only record of a nematomorph from the Komandor Island. G.I.P.

572—Zoologischer Anzeiger.

- RÜHM, W., 1956.—“Bemerkungen über die Pseudodiplogasteroidinae Körner 1954 (Nematoda).” 156 (11/12), 293-299.
- HARTWICH, G., 1956.—“Südamerikanische Acanthocephalen aus der Zoologischen Sammlung des Bayerischen Staates.” 156 (11/12), 299-308.
- PAESLER, F., 1956.—“Beitrag zur Erweiterung der Kenntnis der Gattung ‘Myolaimus’.” 157 (11/12), 223-231.
- PAESLER, F., 1956.—“Beschreibung einer neuen *Plectonchus*-Art, *Plectonchus sucicola* n.sp.” 157 (11/12), 231-234.

(572a) Rühm describes and figures *Pseudodiplogasteroides saperdae* n.sp., found in the burrowings made by the longicorn beetle, *Saperda carcharias*, in a poplar tree. A biological relationship between the beetle and the worm is possible but could not be demonstrated. In order to accommodate the new species the generic diagnosis has been revised and two new subgenera created, *P. (Protodiplogasteroides)* n.subg. of which the new species is the type, and *P. (Pseudodiplogasteroides)* n.subg. A.E.F.

(572b) Hartwich has been studying acanthocephalans from South America collected between 1912 and 1930 and now housed in the Bavarian Zoological Collection at Munich. The following species are described and their systematics discussed: *Acanthocephalus lutzi* from *Bufo arenarum*, *A. tumescens* from *Percichthys trucha*, *Polymorphus mutabilis* from *Fulica* sp., *Corynosoma strumosum* from *Otaria jubata*, *Centrorhynchus conspectus* from *Strix rufipes rufipes*, *C. polymorphus* (host uncertain), *C. tumidulus* from *Leptodactylus ocellatus* and *Neoechinorhynchus australis* from *Prochilodus platensis*. A.E.F.

(572c) Paesler compares two forms of *Myolaimus heterurus*, *longicauda* and *brevicauda*, with descriptions of the species by Weingartner and Meyl and with Hirschmann's description of *M. stammeri* and demonstrates the range of variation. The loose cuticle of the eelworms changes its appearance when specimens are transferred from slime-flux of trees to water

because of osmotic differences. *Myolaimus dendrodipnis* n.sp. is described and figured. It differs from *M. heterurus* in the form of the head and female tail. The male tail is very similar to that of *M. heterurus* and has a bursa and seven pairs of papillae [although only five pairs are illustrated]. J.B.G.

(572d) *Plectonchus sucicola* n.sp. is described and figured. [It is not compared with the other recorded species and seems to differ very little from them.] Only three pairs of caudal papillae on the male are described, [the other species have six]. The specimens were found in slime-fluxes on apple and elm trees. J.B.G.

573—Zooprofilassi.

- a. MONTRONI, L., 1956.—“Intestino tenue di maiale con lesioni noduliformi provocate dal *Macracanthorhynchus hirudinaceus* (*Echinorhynchus gigas*).” 11 (2), 75-76.
- b. MICOZZI, G., 1956.—“L'eleoforasi negli ovini.” 11 (7), 441.

(573b) The usual lesions caused by *Elaeophora schneideri*, a parasite of sheep in the western U.S.A., are thickly crusted patches which are devoid of wool and are found particularly on the joints and head, and may be associated with lesions of the eyes, nose and mouth. If proliferative rhinitis is present the nasal cavities may become occluded. The skin lesions normally heal in about three years leaving bald keratinous patches. M.MCK.

NON-PERIODICAL LITERATURE

- 574—ANON., 1956.—“Soybean cyst nematode.” Washington, D.C.: U.S. Department of Agriculture, Agricultural Research Service, ARS 22-29, 10 pp.

This is a special report giving details of the discovery and distribution of the soya bean cyst nematode in America. There is a detailed description of the nematode and its life-history, and an account of current research on the pest. J.J.H.

- 575—CRISP, G., 1956.—“*Simulium* and onchocerciasis in the Northern Territories of the Gold Coast.” London: H. K. Lewis & Co. Ltd., xvi+171 pp.

In this monograph Crisp, Director of the Entomological Unit of the British Empire Society for the Blind, gives an account of the investigations made by the Society's team of entomologists into the biology and geographical distribution of *Simulium dammosum*, vector of *Onchocerca volvulus* in the Northern Territories of the Gold Coast, and suggests a plan of control. R.T.L.

- 576—DICKSON, J. H., 1956.—“Diseases of field crops.” New York & London: McGraw-Hill Book Company, Inc., 2nd edit., xi+517 pp.

This book brings together current knowledge and references on the diseases of cereals, grasses, legumes and fibre plants, but nematode infections are only casually mentioned. R.T.L.

- 577—EUROPEAN & MEDITERRANEAN PLANT PROTECTION ORGANIZATION, 1956.—“*Heterodera rostochiensis* Woll. Potato root eelworm in Europe and the Mediterranean Basin in 1955.” Paris: European & Mediterranean Plant Protection Organization, 18 pp. [Also in French.]

The incidence of the potato-root eelworm and the measures taken to control and prevent it in various European and Mediterranean countries during 1955 are described. The pest has been notified for the first time in Norway, Luxembourg and Israel. Its extension to new areas in Algeria, Lower Austria, Belgium, Germany, Greece, Jersey, Guernsey, Iceland, Netherlands, Saar and Sweden are now reported. No infection has yet been reported from Egypt, Italy, Libya, Malta, Portugal, Switzerland, Tunisia, Turkey or Yugoslavia. R.T.L.

- 578—HAMBURGER, R., 1956.—“Das Vorkommen parasitischer Würmer bei Kaninchen und deren pathogene Wirkung mit besonderer Berücksichtigung von *Trichostrongylus*.” Dissertation, Munich, 38 pp.

Hamburger has examined 426 rabbits from 64 rabbit farms in the Munich region and reports the following helminth infections: *Cittotaenia ctenoides*, 4; *Strongyloides papillosus*, 11; *Protostrongylus commutatus*, 9; *Graphidium strigosum*, 1; *Trichostrongylus retortaeformis*, 89; *Passalurus ambiguus*, 56. A study of *Trichostrongylus* infection in rabbits leads to the conclusion that the pathological effects are due to disturbances in the secretion of gastric juices caused by both larvae and adults. The metabolic products of the worms are also probably implicated. The importance of hygienic measures in preventing parasitic infection in rabbits is stressed.

A.E.F.

- 579—KASIMOV, G. B., 1956.—[Helminth fauna of domestic and game birds of the order Galliformes.] Moscow: Izdatelstvo Akademii Nauk SSSR, 554 pp. [In Russian.]

Kasimov gives diagnostic descriptions and, where available, the biology of the 412 helminth species known in gallinaceous domestic and game birds. There are 406 figures and a list of the parasites under their hosts. He briefly discusses (i) the significance of this group of birds in Russian economy, (ii) the influence of helminths on the numbers of birds and (iii) those infections common to wild and domestic Gallinae.

G.I.P.

- 580—LEIKINA, E. S., 1956.—[The more important helminthiases of man.] Moscow: Gosudarstvennoe Izdatelstvo Meditsinskoi Literaturi Medgiz, 207 pp. [In Russian.]

- 581—MICHEL, F., 1956.—“Biologie des diverses espèces du genre *Strongylus*.” Thesis, Alfort, 63 pp.

- 582—PARAMONOV, A. A. & BRYUSHKOVA, F. I., 1956.—[The potato stem nematode (*Ditylenchus destructor*) and its control.] Moscow: Izdatelstvo Akademii Nauk SSSR, 112 pp. [In Russian.]

This popular booklet deals with the general structure of plant-parasitic nematodes, and particularly of the more common nematodes of the potato, and with the structure, biology, pathology and control of *Ditylenchus destructor*, and the collecting, fixing and staining of plant-parasitic nematodes.

G.I.P.

- 583—PARTEARROYO, J. P. G. DE, 1956.—“Estudio comparativo de diversas técnicas para el examen coproparasitoscópico.” Thesis, Escuela Nacional de Ciencias Químicas, Mexico, 24 pp.

Partearroyo examined each of 200 faecal samples from 92 persons by direct smear and by the methods of Faust, Bayona, Ferreira & Abreu, and Baermann. Ferreira & Abreu's was the best method for helminth infections, particularly in those with small numbers of eggs and larvae. Ignoring unfertilized *Ascaris lumbricoides* eggs, it detected infection in 94.8% of the positive samples and, apart from extreme counts, it concentrated 13.6 to 29.7 times as many eggs as Faust's method. Larvae were most successfully detected by the Baermann technique and unfertilized *A. lumbricoides* eggs by direct smear.

M.MCK.

- 584—PODYAPOLSKAYA, V. P., 1956.—[The role of ascariasis in the aetiology of allergic diseases.] Moscow: Gosudarstvennoe Izdatelstvo Meditsinskoi Literaturi Medgiz, 10 pp. [In Russian.]

- 585—SAWITZ, W. G., 1956.—“Medical parasitology. For medical students and practicing physicians.” New York & London: McGraw-Hill Book Company, Inc., 2nd edit., ix + 342 pp.

- 586—S'JACOB, J. J. & STEMERDING, S., 1956.—“Een handleiding voor nematologie.” Wageningen: Plantenziektenkundige Dienst, Ministerie van Landbouw, 107 pp.

The first three chapters deal with taxonomic relationships, morphology and systematics of nematodes, including a key to the genera of the Order Tylenchida. The remainder of this 107-page manual is the Dutch equivalent of Goodey's "Laboratory Methods for Work with Plant and Soil Nematodes" [for abstract see Helm. Abs., 26, No. 41a]. There is a glossary of scientific and nematological terms, and lists of journals, equipment, and fixatives and mountants are given in three appendices.

R.D.W.

- 587—TERENTBEVA, F. A. & MARKOVA, A. A. [Editors], 1956.—[Infective and invasive diseases of cattle.] Moscow: Gosudarstvennoe Izdatelstvo Selskokhozyaistvennoi Literaturi, 631 pp. [In Russian.]

This book on the diseases of cattle includes a section (pp. 518–584) by Antipin on helminthiasis. The 62 helminth species occurring in Russia are listed and the diagnosis, life-history, pathology and control of the pathogenic species are summarized.

G.I.P.

- 588—WALLNER, J., 1956.—“Über die Widerstandsfähigkeit von Wurmeiern und -larven der wichtigsten Haustierparasiten in Futtersilos.” Dissertation, Munich, 34 pp.

Wallner has studied the effect of ensilage on survival of helminth ova and larvae. He reports that *Fasciola hepatica* ova are killed within 30 days in all cases. *Ascaris lumbricoides* ova are killed within 30 days in silos where the temperature exceeds 40°C.: at least two-thirds of them do not survive four months where the temperature is below 30°C. *Taenia pisiformis* ova and *Dictyocaulus filaria* larvae are killed within four months in all types of silo. Wallner concludes that the feeding of silage to domestic animals will reduce the incidence of helminth infections.

A.E.F.

- 589—ZVEREZOMB-ZUBOVSKI, E. V., 1956.—[Pests of the sugar-beet.] Kiev: Izdatelstvo Akademii Nauk Ukrainskoi SSR., 276 pp. [In Russian.]

This book deals chiefly with the insect pests of sugar-beet in Russia, but includes short paragraphs on *Heterodera schachtii*, *H. marioni*, *Ditylenchus dipsaci* and *Pratylenchus pratensis*.

G.I.P.